

University of Delaware
Disaster Research Center

REPORT SERIES
#4

COMMUNITY FUNCTIONS
UNDER DISASTER CONDITIONS

Dennis E. Wenger
and
Arnold R. Parr

April, 1969

OCD REVIEW NOTICE

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FOREWORD

This document is one of a series of publications prepared by the staff of the Disaster Research Center, The Ohio State University. This aspect of the work of the Center has been sponsored by the Office of Civil Defense under Contract OCD-PS-64-46 Work Unit 2651-A. Below is a listing of the materials which have been included in the monograph and the report series.

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The Public Works Department in Disaster Operations

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Salvation Army Activity in Disasters

The American National Red Cross: Programs, Policies and Problems

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CHAPTER I

THE COMMUNITY PRIOR TO DISASTER IMPACT

Introduction

This report will be concerned with tasks of communities experiencing disasters. The focus is primarily upon natural disasters. Although in many societies responsibility for disaster activity ultimately rests at the national level, in the United States the responsibility is on the local community. While the boundaries delimiting a community seldom approach any degree of neatness, in terms of the traditions which have developed in the United States, local authority is normative in such situations. Every year many communities are called upon to mobilize their resources to cope with the impact of natural disaster. Since 1953 there have been over 230 major disaster declarations by the President of the United States. The types of community tasks which are created by disasters and the ability of the community to complete them are considered in the following chapters.

This chapter focuses upon the nature of the community prior to disaster. Chapter II deals with the response of a typical community to a disaster event. Chapters III, IV, V and VI discuss the various community activities and processes which are evoked by the disaster event. The concluding chapter, Chapter VII, considers the "intervention" of extracommunity agencies in assuming operating roles in a devastated community.

The data reported in the succeeding chapters come primarily from disaster studies of the Disaster Research Center at The Ohio State University. Founded in September 1963, this Center has as its purpose the study of organizations experiencing stress, particularly in disasters and during the emergency period. One of its objectives has been to collate and synthesize findings obtained in prior studies of organizational behavior under stress. This report encompasses the ideas and formulations of various staff members of the Disaster Research Center, and consequently explicit acknowledgement in footnote form from internal sources is not practiced. Footnoting is confined to previously published studies and to Disaster Research Center publications which are more readily available.

We now turn to a more explicit statement of the purpose of this chapter. The understanding of community tasks during a disaster requires some knowledge of the nature of the community prior to the disaster event. It is the purpose of this chapter to set forth an account of a "typical" American community. The focus will be upon the more general processes which occur in the average American community. It is considered necessary to view the community in a more abstract form, not restricting it to particular examples.

While there are many types of communities, our particular focus here is on geographic clusters of people, the locality. Geographic population clustering generally sets into motion certain processes which make these localities into communities. When people are engaged in similar activities and subject

to the same or similar events, this similarity of preoccupation generates topics for conversation and creates bonds of mutual understanding. Such similarity then provides the basis upon which community organization may develop. For purposes of convenience we do not consider such metropolitan complexes as London, Tokyo, New York, or the crossroads settlement of a dozen families. Rather, we focus upon communities of a more medium size.

The Community as a Social System

For our purposes the community will be viewed as a social system which acts in a collective fashion to solve certain problems. In a locality, a division of labor develops to cope with day-to-day problems, and these repetitive social relationships which result become the overall organization of the community. We now sketch out our conception of the community as a social system in its normal state.

During normal (i.e., non-disaster) times, most communities tend to be organized around certain traditional functions. Warren has suggested five locality-relevant functions: (1) production-distribution-consumption, (2) socialization, (3) social participation, (4) social control and (5) mutual support.

1. Production-distribution-consumption, i.e., participation in the process of producing, distributing and consuming those goods and services which are a part of daily living and access to which is considered desirable in the community.
2. Socialization, i.e., the process of transmitting knowledge, values and norms for behavior to individual members. This function is the concern of the family, the formal educational system and to a lesser extent the mass media.
3. Social participation, i.e., the process whereby opportunity is provided for social interaction on a local basis. Religious and voluntary organizations are important here, but all formal and informal contacts provide avenues for participation.
4. Social control, i.e., the process whereby community members are influenced toward conformity to the norms. Almost every group -- family, school, church, local governmental agencies -- performs this function.
5. Mutual support, i.e., the process by which needs arising from individual and family crises are met. Local primary groups based on family, friendship or religion provide many of these services, but there is a tendency in many American communities to develop formal social welfare organizations to meet these needs.¹

In carrying out these locality-relevant functions, communities seek to achieve certain values, which vary from one society to another, from one

locality to another and which change over a period of time. While methods of determining the presence and saliency of values are not precise, both verbal affirmations and observation of behavior give clues to the existence of values in specific situations. Without attempting to detail here the scope and intensity of certain specific values within American community life, let us suggest that the day-to-day activities of a community reflect the collective attempt to achieve many different values. While most social situations involve multiple values, time, energy and other resources are normally available to achieve values without conscious choice and, thus, in normal situations, the question of the relative importance of different values is seldom raised. Activities of most individuals within communities are compartmentalized; time and energy are spent in the pursuit of economic values at one time and, on other occasions, time and energy are spent on family life, education or some other value. Too, various organizations and personnel within a community tend to specialize in the attainment of specific values. The value attached to the preservation of life is the "responsibility" of hospitals and trained medical personnel, such as physicians and nurses. The value of education becomes the "property" of the schools and the concern of principals and teachers.

During normal times, all of the major functions within a community are carried out somewhat concurrently. There is generally little awareness among the members of a community of any overall system of priorities. While individual members of the community may be preoccupied with one or another, there is a degree of balance among the activities which relate to the various functions. At times, effort may increase in certain functional areas, particularly when it is seen as falling below community standards. For example, the periodic preoccupation on the part of specific communities with improving their schools or police force, recruiting new industry, forming new groups, etc., represents attempts to increase the capacity of the community to function in particular areas. While community standards may change over time, in general, at any one time such standards are determined by the value consensus which exists within the community. This consensus is, of course, conditioned by the perceptions of community members as to what is possible within the specific locality, the actual facilities which are available and by the definitions of local decision makers. In effect, then, the major functions within a community in normal times tend to be carried on concurrently and without much "conscious" consideration for priorities except for periodic readjustments.

These locality-relevant functions are carried out during normal times by a wide variety of types of organizations which can be described in many different ways. Two dimensions are particularly important in the disaster context. First, organizations differ as to their orientation to the community. Some are organized to deal with problems relevant to the "whole" community while others have more "private" goals to which they are oriented. For example, a fire department has as its major responsibility protecting the community from fire while a manufacturing firm in the community is oriented to maximizing profit in making its particular product and marketing it wherever it might be sold. Second, organizations differ as to whether they possess what might be called emergency resources. Taking our previous example, the fire department has resources of equipment and personnel which are exceedingly important in an emergency but, let us suppose, the private manufacturing firm produces

phonograph records. While many items are unexpectedly important as emergency resources, it would seem unlikely that phonograph records would become a high priority item. A community might find a construction company with much heavy-duty equipment to be exceedingly valuable during an emergency.

When we classify by these two descriptive variables, the degree of "community orientation" and the possession of "emergency resources," four different combinations appear (see Figure 1). First, and most important in this context, are what we will call community emergency organizations -- those having a community orientation and possessing emergency resources. There are organizations with a community orientation, but with few emergency resources which we will call community-relevant organizations. As well, there are other organizations which possess emergency resources, but have a private orientation. These we will call emergency-relevant organizations. Finally, there are many organizations, "privately oriented" and with no emergency resources.

We have identified those organizations which possess a community orientation and relevant emergency resources and labeled them community emergency organizations. These organizations and the rest of the formally organized structures within the community are the sources of much of the predictable behavior which one observes in a community. Individuals often forget the extent to which their daily lives are formally organized since the rules of various organizations, over time, become a part of their personal habits. The time and place of work, to say nothing of the work routines themselves, are largely determined by the rules and plans of formal organizations. The traffic signs and lights on the streets as one goes to work are controlled and maintained by formal organizations. The busses are also scheduled, owned, operated by organizations. Recreational facilities ranging from bowling alleys to movies, are owned and operated. We play and enjoy, on the organization's time and locale, seldom on our own terms. Newspapers, radio, and television all have their contents established by the work of individuals in collective situations. The mosaic of such formalized organizations within the community is complex and its "density" is great.

Most of the activities of such organizations are, however, means to other ends within the community. Businessmen and industrialists are oriented toward the production and distribution of goods to gain for themselves and others a share of the price of the goods and services. Governmental officials seek to maintain order and public facilities within the community, as well as their own political tenure. Councils of social agencies attempt to maintain some overall planning and support for the various health and welfare agencies within the community. Those who own or manage newspapers, radio stations and television stations seek to maintain a sizable audience on which they can base advertising rates which allows them to continue their operation. In actuality, the activities of a particular organization may be directed to several ends, not just one. To a certain extent what one sees when he looks at the "total" community is the activity of a wide variety of organizations seeking diverse ends and utilizing diverse means. The end result of the pursuit of the diverse goals is largely unplanned and unanticipated.

FIGURE 1
TYPES OF COMMUNITY ORGANIZATIONS

Description	Examples	Organizational Characteristics	
		Community Orientation	Emergency Resources
Community Emergency Organizations	Police, Fire, Red Cross, etc.	+	+
Community-Relevant Organizations	Welfare, Religious, and Service Organizations	+	—
Emergency-Relevant Organizations	Contractor Unit with Heavy Equipment, Department Store with Trucks	—	+
Non-Relevant Organizations	Luxury Retail Stores, Entertainment Organizations	—	—

In addition to the formal organizations, one can also discern another "level" of social organization within the community. These constitute the informal relationships based on the variety of individual and familial choices. These informal relationships develop outside formal organizations as well as in those areas of the organization which are less subject to the rules and regulations. The office friendship or clique, the neighborhood gossip chain, the informal bridge club, the kin-oriented recreational relationships represent part of the scope of more private informal relationships which are patterned by choice rather than by design.

Conclusion

Some knowledge of the community context in which the disaster event takes place is essential for an understanding of the social consequences of the event. It has been the purpose of this chapter to outline the major functions and organizational structure of a typical American community. It is concluded that in normal day-to-day activities of the community, there is usually time, energy and other resources available to achieve diverse functions and the question of relative value and choice among alternatives seldom is critical. At one time, resources of time, energy and materials can be spent in the pursuit of economic goals and, at other times, such resources can be devoted toward education, sociability, and religious activities.

FOOTNOTES: Chapter I

1. Roland Warren, The Community in America (Chicago: Rand McNally and Company, 1931), pp. 9-11.

CHAPTER II

COMMUNITY RESPONSE TO A DISASTER

Introduction

In this chapter we turn to the consideration of the response of a typical community to a disaster event. The disaster event activates certain changes at the community level within which emergency action takes place. It will be argued here that disasters create unity rather than disorganization. The consequence of a disaster event on a locality is in the direction of the "creation" of community, not its disorganization, because during the emergency period there emerges a consensus of opinion on the priority of values within a community; there develops a set of norms which encourage and reinforce community members to act in an altruistic fashion; also, disaster minimizes conflict which may divide the community prior to the disaster event.

The Development of an Emergency Consensus

As was pointed out in Chapter I, in a normal community system there is usually time, energy and other resources available to achieve diverse functions and the question of relative value and choice among alternatives seldom is critical. The disaster event changes this situation rather drastically. No longer can one assume that resources will be in plentiful supply so that all values within the community can be achieved. Such luxury cannot be assumed; choices have to be made. Certain of the existing values become less salient or, at least, the achievement of them may be delayed until other more important values have been fulfilled.

With the appearance of the threat of the disaster event, the existing community values assume a system of priorities because certain values are more critical for the survival of the community. The problematic state of resources necessitates choice in allocation of the time and energy of the community to these more salient values. In addition, certain norms become more crucial, in that behavior which is directly related to high priority values is positively sanctioned, while behavior related to lower priority values is considered inappropriate. Certain functions of the community are neglected in the process. Establishment of a set of priorities occurs somewhat automatically during the emergency period. The resulting system of priorities and the widespread agreement throughout the community on this priority system we will call an emergency consensus.

One consequence of this re-evaluative process is that organizations within the community which are more relevant to the values within this emergency consensus will become "critical" organizations in subsequent activity, but certain aspects of a particular organization's pre-disaster activity may not become more important. In addition, the activities of some organizations within a community will become irrelevant to the context of the new consensus and many of these organizations will seek activities which are crucial to the new

situations and quite different from their usual pre-disaster activity. In the following paragraphs, we will discuss core values and then return to a discussion of their effects on locality-relevant functions.

The Development of Core Values -- Care for Victims

In observing behavior following impact, one could suggest that the value which receives the highest priority centers on the care for victims. Provision of first aid and transporting the injured to sources of medical attention are given the most immediate attention. This is done in the context of immediate rescue activities, such as extricating trapped individuals or evacuating individuals from dangerous areas. After obvious victims are given medical attention or rescued, the impacted area is searched for "unknown" victims.

Next, attention is given to procuring and distributing basic necessities for those in the impact area: shelters are often provided on a temporary basis by opening large public buildings, such as schools, auditoriums, churches, etc.; food is provided by local voluntary agencies; temporary clothing supplies are also often provided. Special less crucial medical attention is often given, and particular attention is frequently shown to the needs of babies and small children. Basic necessities are usually provided at "no cost" to those in need.

While the above activities seem to reflect the core values of care for victims in the emergency consensus, other community activities also reflect core values. Secondary functions are next sanctioned, these being the functions which have a direct but secondary bearing on activities immediately stressing core values. Those community activities which support and facilitate the attainment of these values become a "second" level of activity. Such sanctioned activities include the following: restoration and maintenance of "essential" community services, maintenance of community order, and maintenance of community morale.

Restoration and Maintenance of "Essential" Community Services

If the impact has disrupted utilities, transportation arteries and communication facilities, the restoration of these to some functioning level is given high priority. Community-oriented facilities most directly related to the preservation of life seemingly are given the most immediate attention. Restoration of electric or telephone facilities to hospitals, fire and police departments or command centers takes precedence over "private" concerns.

In order to restore and to facilitate care for the injured, all community resources, both public and private, are considered relevant. Often "private" property is used in the process of restoration to such an extent that (1) individual use of private property is considered inappropriate if such property is needed by the larger community and (2) private property is seen as a possible resource to be used for the total community, almost regardless of the wishes of the owner.

Maintenance of Community Order

Community order is seen necessary by community officials to accomplish the tasks involved in the preservation of life and the immediate restoration of essential services. Community personnel and facilities are committed to the tasks of guarding property, patrolling danger areas, directing traffic near the impact area which facilitate the preservation of life and the restoration of services.

The focus of activity seems to be not only the protection of property but the attempt to see that community resources, both public and private, are used for common community ends, not for individual ones. For example, in most disaster studies, there exists a common paradox that community officials, particularly those charged with problems of the community order, such as the police, become concerned with the prevention of "looting" while careful studies in disaster situations indicate that looting is infrequent, if not non-existent, in disaster situations. What seems to happen is that the community redefines almost all property as "communal," in the sense that the community has first claim on the use of any resource. Looting is seen as the appropriation of "communal" property for private use and, hence, as extremely threatening to the community. Even those individuals who "sift" through the wreckage to salvage their own property may be suspected of looting.

Maintenance of Community Morale

In modern societies the mass media play a leading part in describing and interpreting the disaster event. Since many radio stations have auxiliary power sources and since transistor radios are widely diffused throughout many populations, radio stations often provide a continual stream of information concerning the extent of the disaster, ongoing countermeasures, often enumerating which activities the "public" should avoid or engage in during this phase. Community agencies release information about their activities to the mass media. Political officials often appear on radio or television with a description of what has happened and instructions as to what to expect in the future. A major theme in these appearances is that (1) "we" acted heroically during the disaster and (2) "we" will rebuild and go on to a better future.

A major activity supporting community morale during the early stages of a disaster is reuniting families separated by the disaster and providing information which reassures family members of the safety of other relatives. This activity often extends outside the immediate community. Inquiries come into the community from far distant communities, and local people attempt to send messages to reassure relatives and friends of their safety. The task of information clearance is one which is usually not previously institutionalized within a community and often several organizations assume this task and, as a result, conflict and confusion ensue. Mass media often provide such information initially until it becomes the definite responsibility of a specific organization.

In general, tasks of maintaining community morale fall to the mass media. Radio (in particular), television and newspapers provide channels for

information and specific directions to members of the disaster-stricken community. In addition to information activities, there are constant references to the community in a collective sense; collective pronouns such as "we," "us," and "our" are used in mass media discourse, in order to reassure community members, to provide a sense of unity, and to suggest a sense of future purpose for the community as a whole.

The Development of a Priority of Functions

Looking back at the locality-relevant functions of a community described earlier, it will be noted that some aspects of certain functions become irrelevant in the emergency activity just as others have become particularly relevant. Many of the community's activities which serve the more traditional needs are suspended and only those aspects which have clear relevance to the immediate situation continue to have high priority. The relevance situation is somewhat as follows:

Production-Distribution-Consumption

This function is drastically altered: production units are shut down except for those which produce essential commodities; normal volume of distribution and marketing is reduced since much of the food supply is distributed without cost and goods which are needed are often "requisitioned" without permission or authority.

Socialization

Socialization activities associated with formal structures are reduced to a minimum. Public education programs are cancelled, and the resources of these agencies may be diverted to sheltering and feeding disaster victims and rescue workers. However, the socialization functions of mass media are increased as indicated previously, while their entertainment functions decrease proportionately, being severely curtailed as mass media become the primary source of knowledge about the disaster and of the appropriate attitudes and behavior for community members during the emergency period.

Social Control

Certain norms and procedures become more important than they were in normal times while others recede in importance. Traffic and parking violations are often ignored unless clearly flagrant; domestic disputes, drunkenness, disturbing the peace and other "personal" violations are often ignored, while certain violations, such as the appropriation of private property for private use, are severely condemned. Normal arrest and court procedures are often suspended.

Many activities of the civil government change their character. Actions of minor governmental officials which would normally be reviewed by elected officials are sanctioned "after the fact." Elected political officials often assume integrative roles within the community and provide reassurance and interpretation to community members. The operational activities of various

governmental officials are judged on the basis of efficiency in achieving certain goals and the procedural "niceties" are ignored.

Social Participation

Many normal avenues of social participation are terminated after a disaster event. Clubs, associations, major social and cultural events are suspended. Many voluntary associations assume disaster-relevant activities. Social participation is at the informal level and occurs in the context of carrying out disaster-related activities.

Mutual Support

The particular function assumes great prominence. Fritz has suggested that disasters have the following consequences:

The widespread sharing of danger, loss and deprivation produces an intimate, primary group solidarity among the survivors, which overcomes social isolation and provides a channel for intimate communication and expression and a major source of physical and emotional support and reassurance.¹

To the disinterested observer, these shifts in priority seem to occur somewhat spontaneously and new social relationships to cope with the situation seem to develop "naturally."

The Development of Norms Encouraging Altruistic Behavior

It should not be assumed that members of a community will necessarily exhibit "helping" behavior toward others less fortunate. There is sufficient evidence that chronic conditions of mass suffering have been tolerated for long periods of time in most communities. The existence of slavery for generations would be only one example. The seemingly permanent existence of urban slums would be a more current illustration. In contrast, most disaster situations seemingly evoke a high rate of supportive behavior toward victims.

Altruistic norms and behavior are created in most disaster situations. The optimum conditions for the development of altruistic norms and behavior are found in those situations which cause mass suffering. Natural disasters tend to be free from ideological disputes about cause, which tends to reduce the barriers of communication and knowledge about suffering within the community. In particular types of events, certain other conditions may be maximized; if the impact is sudden and creates socially random damage, this tends to make for greater saliency of the sufferers as a reference group and creates the conditions for relative deprivation. All of these tend to combine to create obligations to help and to perceive "helping" as a community norm. The existence of these conditions and the widespread perception that "helping" is a community norm then tends to increase the actual behavior of helping. In other words, the conditions are created in which community members feel they should help and also creates the conditions in which they do help.

The Expansion of the Citizenship Role

The generation of altruistic norms within the community often leads to a redefinition and expansion of the citizenship role. After disaster impact, the citizenship role expands in the sense that the normative requirements now specify that a citizen should do "anything he can" to help the community. This broad mandate opens the way to participation in many areas of community life which formerly had been restricted to those with specific role obligations. This opens up vast areas within the community which had been unavailable for participation earlier. Such participation is not only allowed but, in many ways, almost required. This expansion of the role provides a pool of volunteers which become both a resource and a problem to the existing organizations. In any case, one of the consequences of the development of altruistic norms within the community is the expansion of the citizenship role. Its consequence is to provide motivated people for emergency tasks which often cannot be anticipated from the pattern of pre-disaster community obligations. In turn, such organizations seldom create opportunities to use these persons effectively.

The Minimization of Community Conflict

Let us assume that in every community there is a residue of potential conflict. Community members are engaged in different types of activities. While some of these are complementary, others may have conflicting goals. Those which conflict tend to engender hostility which does not lead to common community action but to inaction or to community conflict. During the emergency, however, such community conflict tends to be minimized.

There are numerous reasons why community conflict is minimized in a disaster. (1) Since disaster comes from outside the community system and its causes can be perceived and specified, it cannot be easily used to amplify existing community conflict. (2) The development of the emergency consensus places high priority on the activities which benefit the total community and low priority to specialized selfish interests. (3) The problems created by a disaster are immediate and imperative -- rescue, debris clearance, etc. -- and the actions necessary to solve them are apparent. In most other community problems, community members will have different and conflicting definitions of the nature of the problem and of the way it should be solved. (4) Disasters also seem to produce a present orientation which minimizes previous memories of and future opportunities for conflict. (5) Existing social distinctions tend to be minimized in the emergency period in the sense that all groups and statuses within the community may be indiscriminately affected. (6) Finally, disasters tend to strengthen community identification (and hence to minimize community conflict) by creating a dramatic event in the life history of the community, support to primary groups, and wide opportunity for participation in community-relevant activities.

Involvement of Community Organizations

In the preceding chapter community organizations were classified by two descriptive variables, the degree of community orientation and the possession

of emergency resources. Now we proceed to an examination of how different types of organizations become involved in disaster activities and how their disaster activities relate to their pre-disaster ones. For example, some community organizations have tasks within the emergency period which are essentially continuous with their pre-disaster activities. Others, however, have new tasks. In addition, certain organizations maintain a similar set of social relationships from the normal to emergency period while others develop a completely new set of relationships. Using these dimensions of tasks and structure, when one cross-classifies, four different types of organizations are revealed which typically become involved in disaster activity. This is illustrated in the figure below.

FIGURE 2

TYPES OF ORGANIZED BEHAVIOR IN DISASTERS

		Tasks	
		Regular	Non-Regular
S t r u c t u r e	Old	Type I Established	Type III Extending
	New	Type II Expanding	Type IV Emergent

Type I is an established organization carrying out regular tasks. This is exemplified by the official members of a city fire department fighting fires in the impact zone after an earthquake has struck a community.

Type II is an expanding organization with regular tasks. These are more often the result of community or organizational planning. The organization exists on paper, and the core of it exists prior to the disaster event. This would be illustrated by Red Cross volunteers running a feeding operation after a hurricane, supervised by a permanent Red Cross official.

Type III is an extending organization which undertakes non-regular tasks. This is illustrated by a construction company which utilized its men and equipment to dig through the debris and assist during rescue operations.

Type IV is an emergent group which becomes engaged in non-regular tasks. An example is an ad hoc group made up of the city manager, county civil defense director, a local representative of the state highway department and a major from the Corps of Engineers who coordinate the overall community response during a flood.

Sequential Involvement of Organizations

These groups and organizations constitute the range of organized activity within the community in attempting to cope with the impact of a disaster agent. There is a definite pattern, however, to the sequential involvement of these organizations and groups in disaster activities. The sequence appears to be as follows:

Type I organizations are initially involved in any community emergency. There is a public expectation that they will become involved and therefore they are notified. There are also organizational expectations of becoming involved, either on the basis of previous activity or by the definition of the emergency relevance of the organization. Because of their existing structure, these organizations can mobilize quickly and efficiently. They have mechanisms for assessing the demands which will be made on the organization. If the demands made on the community can be handled primarily by Type I organizations, the activating event tends to be treated as a "localized" community emergency.

Type II organizations become involved next. They are organizations with latent disaster resources. They are in a state of readiness and both the community and their own expectations move them toward mobilization and involvement. These organizations, however, generally have only a small, central, permanent cadre of workers during non-emergency periods. Also, while these organizations have emergency responsibility, their normal-time activities are not directly related to existing or current community emergencies. It is clearly expected, however, that these organizations will become active in a different way during a disaster. In one sense, they can be seen as the nucleus with standby functions to be activated for anticipated needs in large-scale disasters. When the disaster occurs, the pre-emergency cadre provides a name and a core of permanent workers for the new structure of expanding organizations. These organizations tend to be mobilized in the event of anything but a most localized emergency, but their mobilization is slower and usually more difficult than for Type I organizations.

Type III organizations are probably the most numerous of all groups involved in major disasters. Often they do not stand out as clearly because their members frequently work in conjunction with or intermixed with Type I and Type II groups. Thus, a citizen's band radio club may help man or provide the operators and equipment for a local civil defense communications network or a church group may staff and operate a shelter under nominal Red Cross supervision. The participants, however, act primarily on the basis of their pre-disaster organizational affiliations. In fact, they become involved because of their organizations' formal or informal participation within the emergency system. In other words, their participation in the community emergency response is the result of their pre-disaster group membership.

Some Type III organizations may become involved at somewhat the same time as do Type II organizations. In general, however, most of them become involved later since community expectations of their involvement is less institutionalized. These organizations become involved primarily because they are community oriented and want to help or because they possess certain resources which become

relevant in the emergency. This means that their participation tends to be delayed until there are tasks identified which they can undertake or until their resources become relevant for some task within the emergency social system. A major factor in the speed of their involvement is the time it takes to make an assessment of the ways in which these organizations can be of assistance.

Type IV groups are by far the most difficult to conceptualize since they have no pre-disaster existence and when the emergency is over they tend to dissolve. They are usually small and ephemeral groups which bear no name. Often they develop no clear-cut boundaries; yet they emerge in large-scale disasters and play an important role in the overall collective response.

Type IV groups tend to become involved last. In part, this is true because their emergence is dependent upon the involvement of the other three types of organizations. While Type I organizations might be able to cope with a localized emergency situation, the increased scope of the disaster event tends to assure the involvement of Type II and III organizations. With the involvement of all three types of organizations, there develops a lack of coordination among these. There also may be no overall control of the various activities taking place. Additionally, there may be a lack of information during the inventory period. All of these tend to be new tasks which have not been anticipated and therefore cannot become the basis of an expanding Type II group nor are they tasks which are felt to be within the previous experience of existing organizations (Type III) in the community. In other words, there are new tasks, and to deal with them, new groups emerge.

In summary, this fourfold classification provides some understanding of the sequential involvement of community organizations during the emergency period.

Development of a Disaster Subculture

An additional factor will now be discussed in the context of the community response to a disaster event. The reaction of a particular community is, in part, dependent upon the previous experience it has had with similar disaster events. That is, previous community activity provides some residue of learning which is applied in subsequent situations. This we will discuss in terms of the development of a disaster subculture.

It is clear that certain events may create a "disaster" while an identical event in another social context will be treated as an "emergency" but not one that threatens essential functions. Many communities as a part of their cultural development have evolved certain social arrangements which "prepare" them for certain events and this preparation does not make the events "disastrous."

Specifically, communities have gradually developed certain institutionalized ways of handling routine emergencies. Historically, this is a long and involved process but the end results are evident. Almost every American community has developed laws governing construction standards and inspection

procedures for buildings. Safety regulations are developed in industries handling combustible materials. Public health measures have been developed to prevent certain epidemic diseases and continued measures of inspection, quarantine and inoculation keep certain diseases under control. The development of emergency rooms in hospitals, ambulance services and first-aid training for police, firemen and other community officials were attempts to cope with the "routine" medical emergencies. In other words, in almost every community, there have been attempts to improve the capability of organizations in the prevention and handling of "routine" emergencies. These attempts tend to be accepted more readily when particular circumstances focus community attention on some "failure." Community action develops measures to overcome such failures.

This institution building is seen most clearly in those areas that develop a "disaster subculture." Moore has developed this concept to indicate a set of cultural defenses which are developed to cope with recurrent dangers.² In one sense, a disaster subculture serves as a blueprint for individuals and group behavior before, during and after the impact of a disaster event. It would include norms, values, knowledge and technology. Values would designate what is important in the disaster situation and how this differs from a "normal" situation. It would include norms which indicate how the threat is to be perceived, what individual action is to take place in specified conditions, how organizational members are supposed to act, i.e., report for work immediately, etc. It would include knowledge about how warning cues are to be interpreted, the potential destructiveness of the disaster agent and the efficiency of particular types of action. It would include a technology, such as a warning system and tools to avoid the worst consequences (i.e., hooks on the ceiling to hang furniture on in flood conditions, taped plywood covers for windows, shelter sites picked out and stocked, etc.). Such disaster subcultures seemingly emerge in communities with a considerable experience in repetitive situations. They learn, gradually, that certain events are repetitive and perhaps even predictable. On the basis of their previous experience and preparation, such communities are able to cope with events on a routine basis that years before would have been considered disastrous. In this sense, over a period of time, a community builds its capabilities to meet the demands it has previously experienced. Evidence of disaster subculture is most clearly seen in certain parts of the United States, such as certain sections of Texas, Louisiana and Florida, which often experience hurricanes, and areas of the Midwest, subject to tornadoes. Many communities, in such localities, become "specialists" -- so to speak -- in handling these frequently occurring natural disasters. Similar disaster subcultures also develop in mining areas where accidents are somewhat routine.

Conclusion

In considering the response of a typical community to a disaster event, we have dealt with the development of an emergency consensus, a priority of values and functions, norms encouraging altruistic behavior, expansion of the citizenship role, minimization of community conflict, involvement of community organizations, and a disaster subculture. This account of community response

to a disaster event is presented at this rather high level of abstraction to provide a setting in which to examine specific tasks which are performed within a community experiencing a disaster. These community tasks are dealt with in the four succeeding chapters.

FOOTNOTES: Chapter II

1. Charles E. Fritz, "Disaster," Contemporary Social Problems, ed. Robert K. Merton and Robert A. Nisbet (New York: Harcourt, Brace and World, 1961), p. 663.
2. Harry E. Moore, . . . and the winds blew (Austin, Texas: Hogg Foundation for Mental Health, University of Texas Press, 1964), pp. 195-213.

CHAPTER III

WARNING AND PREPARATION FOR IMPACT

Introduction

In the preceding two chapters we have discussed the community as a totality which provides the locale for the disaster event. In Chapter I the community was defined as a problem-solving system composed of organizational subsystems. The normal, day-to-day functions of the community were discussed, and an analysis was made of the key organizations who perform these functions. Chapter II examined the overall community response to a disaster agent. Particular emphasis was given to planned and unplanned community adjustments, shifts in priority among the community's basic functions, and the phenomenon of the disaster subculture.

In Chapters III, IV and V we will discuss the various activities and processes which are evoked by the disaster event. These "results" of the disaster event become the objective tasks for the various organizations within a community. As we focus upon the various organizations that perform these tasks, it should be noted that some of these tasks will represent substantial continuities for certain organizations to their pre-disaster activities. Other tasks, however, are somewhat "new" and require adaptation of existing organizations. Regardless of whether the tasks are old or new, they often become the overwhelming activity of particular organizations during the emergency period. These tasks, in effect, are the "necessary" ones to be accomplished.

Disaster-Activated Activities and Processes

Within a community there are some activities which can be initiated prior to the impact of a disaster. Certain disaster agents, notably floods and hurricanes, by their very nature make possible periods of forewarning. Such forewarning allows for preparation for impact.

After impact, other predictable activities are produced. Search and rescue procedures must be started to locate the victims of the disaster. Care must be provided for the dead and injured. If the threat is sustained, certain protective actions may have to be continued. In order to operate as a social system, disrupted community services must be restored to some minimum operating level. Furthermore, activities centering around the care of survivors in the impact zone have to be initiated. If loss of housing, possessions and food supply has been a by-product of the disaster, some arrangements must be made for the temporary supply of these requisites.

Engaging in such activities accentuates other community processes. In order to accomplish such tasks, there is often a preoccupation with problems of order within the community. In addition, there is attention given to the morale and motivation of those individuals and organizations which have become involved in the tasks. The increase in the scope of community activity as well

as the fact that the tasks are relatively unfamiliar among community organizations necessitates the collection and transmission of information. This also evokes concern with controlling activities and coordinating the involvement of acting individuals and organizations.

These activities and processes are summarized in Figure 3.

In Chapters III, IV and V we will basically be attempting to answer two questions. First, what tasks have to be performed by the community in a disaster situation. Second, how, within the organizational subsystem, are these tasks accomplished; i.e., what organizations typically become involved with what specific tasks.

In the present chapter we will discuss the first two activities -- warning and preparing for impact -- and analyze disaster agents, isolating the crucial variables of the agents that may affect the community's response.

Warning

We will divide our discussion of warning into three areas. First, warning will be discussed in a general or somewhat theoretical sense. The phenomenon will be defined, its functions noted, and it will be analyzed as a process. Second, each stage in the warning process will be investigated with respect to organizational involvement. The approach utilized will see the key organizations involved less as separate and discrete entities and more as interrelated parts of a system. Third, we will discuss what factors influence the effectiveness of the warning message. In other words, what factors in the social and physical nexus surrounding the warning process will affect the issuing, distributing and receiving of warning messages.

The Warning Process

Individuals are everyday confronted with a vast number of warnings. Such messages as, "Cigarette Smoking May Be Hazardous to Your Health," "Stop!" "Do Not Enter," "Beware of Falling Rock," and of course, "Do Not Bend, Fold or Mutilate" are common to anyone living in modern society. Furthermore, such devices as flashing lights, wailing sirens, screaming whistles and blaring horns are perceived everyday in most communities and may be responded to by community members as warning messages. From a social-psychological perspective, these written messages and sensory cues, when responded to as warning messages, may all be classified as symbols; i.e., both the organizations and individuals who send or initiate the warning message and those who receive the message and respond to it are in consensus regarding its meaning. For example, when an individual reads the warning message on a package of cigarettes, if both he and the sender share a common meaning regarding this particular warning cue, the respondent may conclude that there is some danger involved in smoking, that he is about to risk his health for a "drag," and that if he does not smoke, he may escape the implied threat to his personal well-being.

FIGURE 3

DISASTER-ACTIVATED ACTIVITIES AND PROCESSES

Group and Organizational Activities	Community Processes
<p>Warning</p> <p>Preparing for Impact</p> <p>-----IMPACT-----</p> <p>Rescuing</p> <p>Caring for Casualties</p> <p>Protecting Against Continuing Threat</p> <p>Restoring Minimum Community Services</p> <p>Caring for Survivors</p>	<p>Accentuated by <u>Group and Organizational Activities</u></p> <p>Generated by <u>Group and Organizational Activities</u></p> <p><u>Maintaining</u> Community Order</p> <p><u>Collecting</u> and <u>Transmitting</u> Information</p> <p><u>Maintaining</u> Group and Organizational Motivation and Morale</p> <p><u>Controlling</u> Activities</p> <p><u>Coordinating</u> Involvement</p>

Of course, meanings may not always be shared. A warning issued is not always a warning received. Furthermore, even if a warning message is received, it may not elicit in the respondent the type of adaptive behavior the sender had intended; i.e., he may not quit smoking, "take cover," or "evacuate the area." Ambiguity on the part of the respondent regarding the warning message and confusion as to what steps can be taken to ameliorate the potential threat, may result in inactivity or dysfunctional behavior that can have severe consequences for the receiver. While we will return to the question of consensus regarding the meaning of the warning message, let us here note that warning does not end with the wailing of the sirens or the initiation of a message.

For a community in a disaster, the warning phase is of crucial importance. As with our example of the cigarette smoker, a proper response to a warning message by a community, its organizational subsystems and individual community members may determine the community's response to the disaster agent. At the community level of analysis, information obtained from environmental cues concerning the possibility of a disaster occurring -- the type of agent, its intensity, duration, scope, etc. -- and possible countermeasures available to reduce its toll in lives, injuries, and property damages may prove crucial in determining the degree of alteration to the community system, its ability to respond to the disaster and eventually return the system to its normal functioning. At the organizational level, warning information may determine to what extent the organization loses personnel and resources -- factors which can significantly alter the organization's functioning in the post-impact period. For the individual, warning may mean the difference between avoiding the disaster and falling victim to it.

Warning procedures are of practical importance, then, in any plans for disaster operations; of particular concern are the efficiency of these procedures in distributing the warning message and their effectiveness in preparing the population for the impact of the disaster.

In this paper disaster warning is conceived as a process; that is, it is viewed as consisting of a number of interrelated activities and procedures in which a variety of groups, organizations and individuals become involved. This is not offered as a particularly new idea, for a number of social scientists have analyzed disaster warning in a similar fashion before.¹

Disaster warning conceived in such a fashion helps to explain the interdependence of the various activities which comprise it. Thus, we become aware of the possibility that an inadequacy, or breakdown, in a certain part of the disaster warning process may result in the failure of the system as a whole. Similarly, a modification in one aspect of a warning system may result in change in another part of it.

The desired consequence of a warning system is, of course, a successful public response -- a response which, given the maximum preparatory, protective behavior on the part of those who reside in the target area, may limit the devastating effect of the agent. Such a response occurs only to the degree that each of the parts of a warning system makes an adequate contribution to the process.

A disaster agent is disruptive to the normal processes of a community because it destroys lives and property, and makes new and unusual demands on the community's institutions and groups. Often, effective warning mitigates the impact a disaster agent has on a community. The purpose of warning is to provide a threatened population with critical information regarding " . . . (1) the existence of danger, and (2) what can be done to prevent, avoid, or minimize danger."² Thus, the warning message should alert the public to the possibility of a radical environmental alteration, and should provide information on the most desirable defensive measures to adopt. When these requirements are met, the likelihood of an effective public response is increased.

Warning is the beginning of the human adaptation to disaster. When a perceived crisis and warning activities are followed by an actual disaster, the period of warning is then viewed as one of the phases of the disaster. This initial phase may determine the magnitude of the impact of the disaster.

Warning, of course, is possible only in specific kinds of disasters. In particular, time periods in which warnings can take place occur in floods, hurricanes, seismic waves and similar disasters. In other types of disasters -- explosions, collisions, etc. -- there may be too little time prior to impact for complete warning. In many disasters, however, where the period of forewarning is short, such as in tornadoes, it is still possible, with the development of a warning technology and a disaster culture, for warning to take place.

Moore et al. have suggested that there are certain phases in the warning process: (1) detection, (2) prediction, (3) dissemination, (4) reception, (5) evaluation, (6) reinforcement, and (7) recall.³

The detection phase consists of the period during which certain environmental cues are discerned and interpreted in order to detect the presence of a threat. The prediction phase is the interval of time during which the potential threat is kept under observation and attempts are made to forecast when, where and with what force the impact will occur. Prediction often makes the difference between a general alarm and a specific one.

The dissemination period is that time interval during which information about the possibility of impact is disseminated throughout the potential disaster area. During this period, the organization with warning responsibility must decide what information to disseminate, when and to whom it will be disseminated, and what kinds of media will be utilized.

The evaluation period is the time interval following the reception of the warning during which the recipients judge the significance of the warning for themselves. Since the warning process is a communication process, it depends upon the receiver of the message as much as it does upon the sender. This evaluation period also goes on as predictions become more specific. Reinforcement refers to the period after impact when it is necessary to continue to warn people of the presence of danger. This phase might be particularly important if population groups have evacuated and, after impact, start to return to an area where continuing danger persists. The recall period is the period when

defensive action is no longer required. It is the phase in which people decide on the basis of information, valid or otherwise, that the danger is over.

While it is possible to look at the warning process as a series of abstract phases, it is also possible to see it as a series of concrete tasks performed by particular organizations. No single community organization has responsibility for warning, but several organizations may become involved. Let us discuss what community organizations are involved with warning tasks in the above phases, viewing the interorganizational relationships as constituting a "system."

The Warning System

In most disasters, certain community organizations are more involved in the warning phase than others. In general, the weather bureau, public health services, state and local police agencies, fire departments, civil defense groups, ham radio groups and radio and television stations often are crucially involved in warning the community. Of course, warnings can conceivably be initiated and disseminated by various groups, agencies and individuals in the community -- and have been at times. However, the complexity of the process and the technology necessary to accomplish these tasks in modern society inevitably mean that organizations with collective skills and pooled resources must bear the major responsibility for such activity. While not discounting the value of visual observations by isolated individuals, the "Paul Revere" image of the alerting process has been replaced by radar, radio and helicopters.

It is useful to treat the functions of these organizations in their warning activities as a "system." Each organization does not carry on its activities in an independent fashion, but either by preplanning or by on-the-spot innovation, they tend to coordinate their activities to reach a more or less common end -- a successful community response. To use the word system to describe organizations interacting implies that, while the parts are semi-autonomous, they are also interdependent and, therefore, may be conceived as a whole.

In tracing organizational involvement, let us amalgamate Moore's seven phases into four general phases: (1) forecast-detection and prediction, (2) dissemination, (3) confirmation-reception, evaluation and reinforcement, and (4) recall. We will be concerned with the first three phases; recall is very similar to the forecast and dissemination stages.

Forecast

Of course, depending upon the type of disaster agent involved, various community organizations may be involved in the detection and prediction of a disaster. However, in those disasters in which there is sufficient time for warning, inputs to the warning system usually come to those organizations which are "attuned" to the environment. Certain of these "environmentally attuned" organizations and agencies may be external to the community system, but become the initiators of the first input into the community warning system. For example SELS (Severe Local Storm Unit of the Weather Bureau) is

charged with the responsibility of forecasting severe thunderstorm activity for all parts of the nation. Particular attention is paid to those meteorological patterns which suggest the possibility of tornadoes. Thus each morning SELS issues an "outlook" which covers the subsequent 24-hour period. In addition, SELS continues its watch of these conditions. When weather data and radar information suggest more definite evidence for the build-up of such storms, severe weather forecasts are issued to local weather bureaus in areas likely to be affected by these storms.⁴ Other external agencies, such as the United States Coast and Geodetic Survey which operates an extensive sea-wave detection and measurement system, and the National Public Health Service, may also provide inputs into the local warning system.

Often local organizations also receive cues directly from the environment. A local weather bureau having radar may pick up strong echoes or hooks on its screen and from this detection, coupled with such varied reports as airline weather information and individual observation, predict the imminent threat of a severe storm or tornado. The local fire prevention bureau may note that the weather has been extremely hot, dry and windy -- ideal conditions for widespread fires. Local river authorities often are able to predict the time and height of floods. Many examples could be offered -- including numerous observations by individuals who call the local weather bureau, police department, civil defense, etc. As one can see, however, most inputs to the warning system center around those community organizations which, as a part of their day-to-day functions, are accustomed to detecting and interpreting environmental cues.

Regarding prediction or decision making about the disaster and warning, it is implicit in the above account that local officials play a crucial role in the warning process. In the final analysis, local officials must decide (1) if the public is to be warned, (2) if so, how it should be done, and (3) what ameliorative information should be issued. Among the considerations that affect whether local officials will decide to alert the community are (1) the nature of the information received from sources outside the community, which is in part a consequence of (a) the speed by which information is sent to them, and (b) the clarity and completeness of the information, (2) changes in the community's environment that can be observed locally and can indicate impending disaster, (3) the past experience of the officials, and (4) the anticipated reaction of the public to the warning message. Decision making under "normal" conditions is often very difficult. It is not surprising that decision making may become even more difficult in certain disasters when information is incomplete or ambiguous, when time is of the essence, and when the decision may have life or death consequences. If however, the detected inputs to the system lead local officials to predict the likelihood of threat to the community, the warning system enters the dissemination phase.

Dissemination

With the decision to warn the community of the impending disaster made, three subtypes of community warning systems are set in motion: an interorganizational system, an intraorganizational system and a public alert system.

First, an interorganizational system is designed to alert those organizations which are particularly vulnerable to the damaging effects of the agent due to the nature and concentration of people they involve (for example, schools and hospitals) or which have important functions in emergency situations (for example, police departments, sheriff's officers, fire departments, civil defense agencies, public utilities, the mass media, etc.). Vital information regarding the disaster is issued to these community organizations from whatever organization (as noted, usually an "environmentally attuned" one) has issued the warning. Of course, any of the above organizations may also detect, predict and issue warnings to the others; such as a television station receiving a "tip" on a landslide or dam break and informing other organizations with disaster-relevant functions. The communication links in this interorganizational warning system must be viewed as reciprocal; the organizations usually remain in contact at least prior to impact. These organizations may be warned by (1) teletype networks, (2) telephone "hot lines," (3) telephone chains, (4) sirens, bells, lights, buzzers, etc., (5) monitored radio reports, and (6) normal communication channels that result from the day-to-day relationships between an organization and its clients, i.e., the communicative processes inherent in "organizational sets."

An excellent example of interorganizational warning is provided in the following account of a Topeka, Kansas tornado on June 8, 1966.

A statewide weather bureau teletype system, including the weather station at the Topeka municipal airport, is monitored by the local radio and television stations, the city police department, the county sheriff's office, and the local post of the state highway patrol. The local weather bureau supplements this network with a telephone calling list. Notified by the bureau over normal telephone lines are nine radio stations outside Topeka which do not have weather teletype monitors; the superintendent of schools, notified both as a precautionary measure and in preparation for the possible use of schools as future evacuation centers; a local citizen's band radio organization; and a local ham radio operators' club.

Under the direction of civil defense, a "hot line" system links the city police and fire departments, the county sheriff's office, the highway patrol post, and civil defense over direct telephone lines. An additional line to the nearby Air Force was being installed at the time of the tornado disaster. Under this "hot line" system, the first agency notified of severe weather conditions or of a tornado watch will relay this information to the other organizations. The purpose of this network is to insure that all these governmental agencies are aware of weather conditions as reported by the weather bureau in advance of any siren sounding.

Finally, after the public alert sirens have been sounded, a back-up telephone fan-out system has been established by civil defense. Its purpose is first to insure that certain organizations have heard the sirens and secondly to see that these sirens have been correctly interpreted as warning of an immediate threat of tornadoes to the area. The three primary categories (sheriff, police and radio-television) would have already been notified by the weather bureau teletype monitor, but confirmation of the actual presence of a tornado is given by telephone from the airport weather station. Apparently, the police department would be the first organization called by the weather bureau since it is for sounding the city-wide civil defense sirens. (As in all the ensuing phases of the chain, the legitimacy of the calling party is confirmed by use of a pre-arranged code name which is to be given only in the event of a tornado alert. Separate code names have been assigned all the organizations in this chain.) After the tornado alert has been verified by the weather bureau and the sirens have been sounded, the police department places five calls which actually initiate the back-up chain. Each agency in turn, after receiving the telephone alert and satisfactorily confirming its legitimacy, places additional calls until all the listed organizations have been contacted. All telephone communications, including the initial call from the weather station to the police, are handled by normal switchboard lines, but many through unlisted numbers.

In addition, it should be pointed out that many organizations have facilities for receiving communications other than those needed in these warning systems. For example, the fire departments, some radio and television stations and at least one hospital have police radio monitors. Also, some have worked out smaller warning networks of their own as a kind of back-up to the back-up chain.

Also, an intraorganizational warning system is utilized. This system is devised to inform members of a particular organization of the presence and progress of the disaster agent. For organizations to respond effectively to the impact, communication and coordination among the organizational members is crucial. Often the media for transmitting the information to the organizational members are a part of the organization's day-to-day communication system, such as police radio systems. Frequently, however, special procedures are put into effect to alert members by telephone chain, etc. The following example illustrates this intraorganizational process.

Perhaps the most interesting organization involved in tornado warnings in Topeka is the private citizen's

radio club. This local group, using privately owned equipment, has developed, with the aid of local weather bureau personnel, a storm watch system whereby five members in cars equipped with mobile radio units are sent to prearranged positions on one of nine storm-watch lines. These five line units are positioned at distances of five miles (due to the limited range of their equipment), thus extending 25 miles from their central control station. Also, another base unit, which is in contact with central control and thus with the five field units, is located immediately adjacent to the radar screen at the airport weather station, enabling a club member to communicate simultaneously with members of the watch line and observe weather patterns on radar.

A local commercial radio station also has a prearranged mobile alert plan. When it is apparent that severe weather conditions are in fact in the area, four station personnel, in mobile units equipped with radio apparatus for contacting the station and for broadcasting "on-the-spot reports" directly, are dispatched in four directions. When one of the mobile personnel sights an actual funnel cloud, the station interrupts its programming to allow the reporter to broadcast what he is seeing and where, where the funnel cloud is heading, and what areas should take cover. Of course, at this point the system has become a public alert system, but the purpose of the plan itself is to keep the broadcast personnel at the station informed so that they in turn may pass this information on to their listeners.

The sheriff's office has enlisted the services of 20 to 24 civilian weather watchmen throughout the county, all of whom reside outside the city limits. These watchmen notify the weather bureau and the sheriff's office of the presence and progress of storms in the area. Also, the city police department dispatches five patrol cars into different parts of the city to observe and report on weather conditions as a part of its weather watch.

Finally, a public alert system is responsible for warning the "general public" as individuals. This system normally includes many different forms of warning cues and devices.

Many members of the public are often warned by directly detecting and interpreting environmental cues themselves. Individuals who have previously experienced a hurricane, flood, tornado or other disaster may be aware of the environmental cues which precede a certain disaster agent. This predictive capacity on the part of the public is evidenced particularly in those areas which undergo repeated flooding, attacks by hurricanes, tornadoes, etc., and have developed a "disaster subculture." For example, many individuals in

"Tornado Alley" are quite expert at reading cloud formations and interpreting other environmental cues.

Of course, many in the public are often warned by other individuals, i.e., interpersonal interaction. The wife of an executive in the telephone company may be contacted by her husband after he has learned of an approaching tornado and informed to take shelter. Likewise, certain organizations may send forth their personnel to "spread the word" to the community. In one disaster, the local sheriff sent his deputies to alert persons in the low-lying areas of the city that a seismic wave was approaching. The deputies were still involved in door-to-door alerting when the first wave hit.

While these interpersonal forms of warning are very important, in many disasters the initiators attempt to increase the efficiency of the warning system by utilizing what is here termed "warning devices." Sirens, bells, buzzers, lights, loud-speakers and other devices are often used in an attempt to reach as many people with the warning message as quickly as possible. For example, when a barge carrying 1,100 tons of liquid chlorine sank in the Mississippi River, the community was warned by police, fire and civil defense sirens, helicopters employing loud-speakers and flags, and the mass media of the approaching danger.

Often, however, the respondent is not aware of the meanings of such ambiguous warning devices as sirens or flags. In many cases, the public turns to radio and television for information. Probably in many disasters the majority of those who receive warnings do so through radio and television.

Topeka radio and television stations have weather teletype monitors, and some also monitor the police radio. Information gathered from these sources concerning weather conditions is passed along to the public as a part of their normal programming. In addition, radio station A has specific preplanned devices and procedures which it enacts during a tornado watch. Whenever this station receives a tornado watch bulletin, it first begins what is termed a beep system. This involves the superimposition of five recorded beeps every two minutes over the regular programming. In addition, any statement from the weather bureau is read every 15 to 20 minutes. When one of the mobile reporters assigned to a weather watch location sights an actual tornado, a recorded siren sound is broadcast, interrupting the actual programming. This siren tape includes a recorded voice announcing that this is a tornado alert, followed immediately by the remote broadcast.

Other radio stations also have specific, but less extensive, procedures. For example, one station which originates separate AM and FM radio broadcasts as well as television switches to "simulcast" whereby all three stations carry the same emergency programming.

In Topeka, the civil defense sirens represent the central mechanisms for warning the public. There are 19 sirens located through the city in addition to one operated by the railroad shops and one by the Air Force base. The city police department is the only agency which can sound the public sirens and is responsible for doing so when a tornado, verified by the weather bureau as representing an imminent threat to the community, is sighted in the area. The police department is also responsible for alerting the railroad so that they may sound their siren at the same time. To the public, the sirens are intended to mean that there is immediate danger of a tornado and that cover should be sought at once. After the sirens have sounded and the threat of a tornado has ended, the "all clear" is given only by the commercial radio stations.

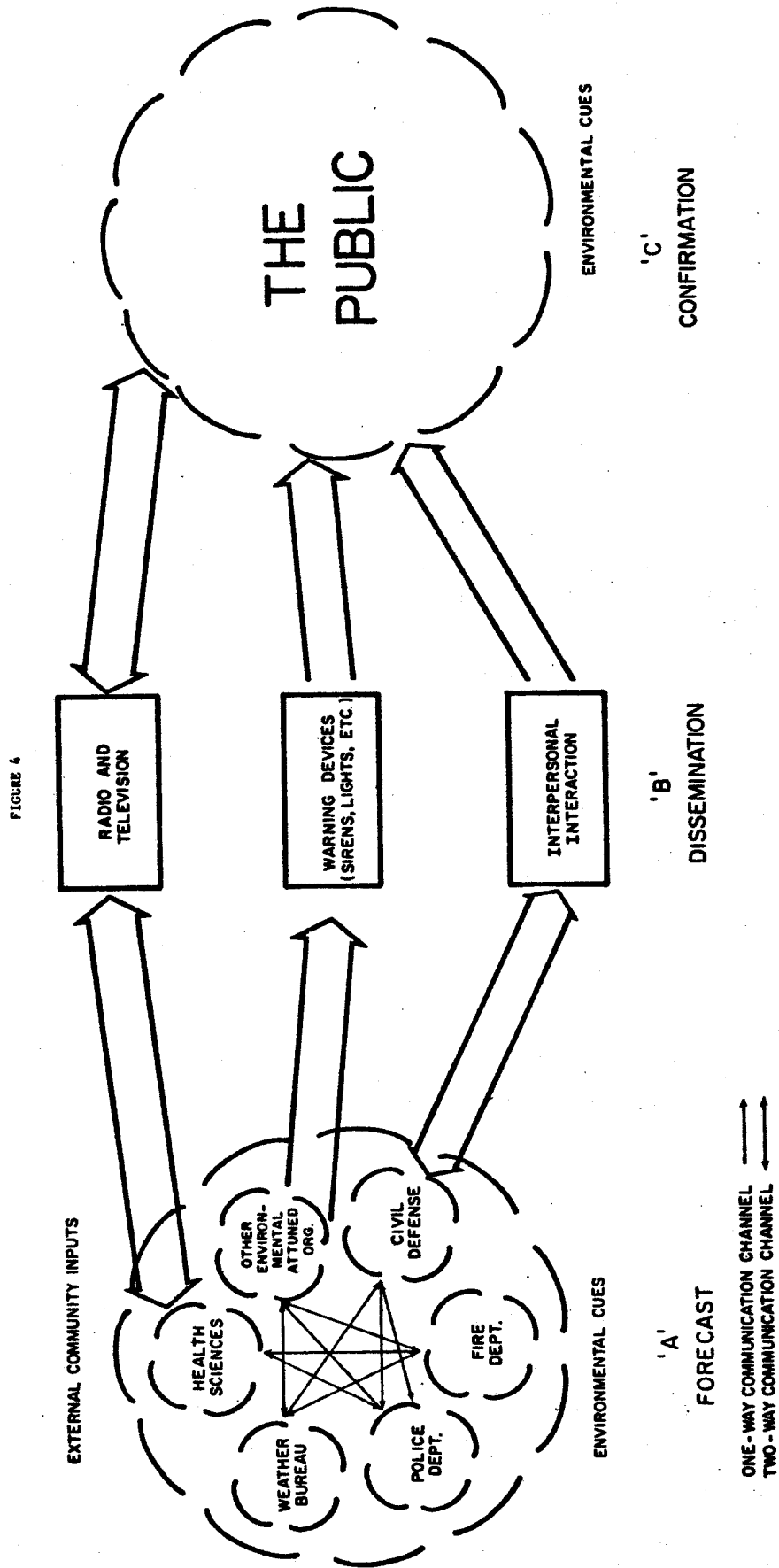
Figure 4 presents a diagram of the warning system. Subsystem "A" includes those organizations that as a part of their day-to-day functioning are "environmentally attuned" and are usually involved in forecasting and deciding to disseminate warning messages. These organizations form an "open system," are interrelated both through reciprocal functions and communication channels, and have external ties outside of the community to state, regional and national organizations. Initial warning cues enter the warning system as inputs often at this point. These inputs come from (1) information received by these organizations from external community organizations (e.g., SELS and local weather bureau) or (2) from directly perceived environmental cues. The channels along which the warning message is communicated from "A" to the public "C" is labeled "B." These channels of dissemination are (1) radio and television, (2) warning devices and (3) interpersonal interaction. It should be noted that the public, "C," also may receive warning cues directly from the environment by direct observation. The three main warning stages of forecast, dissemination and confirmation roughly correspond to the system elements "A," "B" and "C."

Confirmation

Let us now turn to our last major point of discussion. What factors are associated with the success or failure of a warning system?

The federal civil defense administration in 1958 said the odds were against the majority of people responding to a warning preceding a nuclear attack. It was estimated that with the degree of public knowledge and understanding in 1957, no more than 10 to 25 percent of the population would take shelter within 15 to 30 minutes after warning.⁵

In 1964 when the Sun River flooded the city of Great Falls, Montana, warning was possible. However, despite repeated official warnings and weather bulletins, many residents in west Great Falls, the area which was threatened, remained in their homes until the last minute. This reluctance of persons to leave their homes, even when officially warned of a danger, which has been noted in numerous disasters, eventually leads to problems in community response.



In Hilo, Hawaii in March 1964 mild seismic sea waves generated by the Alaska earthquake struck the community incurring little property damage and loss of life. While the waves were not strong, evidence indicates that Hilo would have suffered only slight damage even if a powerful wave had hit. The residents were warned and immediately took appropriate action by evacuating threatened areas. There appeared to be little hesitation on the part of responsible local officials to suggest that evacuation and other protective measures be taken by the public when news of the threat was received. Correspondingly, there was little resistance on the part of residents in complying with such suggestions.

What factors may explain why the population of a community may correctly interpret a symbolic warning message and take functional action in one instance, while in other cases not only is no action (or dysfunctional action) taken, but the community members may not even correctly interpret the warning cue? As previously mentioned, warning is a communicative process. As such, the social and psychological factors involved in human communication may provide the answer.

To reiterate, the warning process is not complete when the alarm has been sounded. The third stage -- confirmation, the attempt to determine the meaning of warning cues -- must follow the actual warning. The outcome of this third stage will largely determine the countermeasures those in danger will take -- or fail to take. Only in those circumstances where the warning signal and the appropriate responses have become automatic (i.e., where the warning signal is a "significant symbol" having shared meanings for both the senders and the receivers) can the sounding of the alarm be defined in any way as the terminating step in the process of warning a population of danger. Indeed, confirmation might well be seen as the most crucial of the stages of warning. Chapman, for example, states that "the prevailing situation in the period of warning is that of human search for certainty in the absence of reliable information."⁶ Williams succinctly summarizes the pattern this search is likely to follow: "When people get a message saying 'this is it!' they seem to need a second message which says, 'yes, this is really it.'"⁷

Most persons would prefer to believe that they are safe rather than in danger and also that despite the sounding and reception of a warning cue or alert signal that nothing bad will happen. This generalization is probably valid for most persons in most warning situations, with the exception of a few individuals who are psychologically set to believe the worst in any situation or have recently experienced a "near miss" disaster. Thus the initial interpretation of an alert signal is likely to be the most unalarming of the available alternative interpretations. An air raid siren indicates first another test, drill or a mistake -- only when these definitions are proven untenable are other less acceptable considerations considered. Any ambiguity or apparent contradictions in the warning messages and environment will typically be cited as evidence not for the worst but for the best. Therefore, successful warning depends upon the amount of information to be contradicted.

The information to be contradicted if the warning is to be successful derives from at least two sources: past experience and immediate perceptions.

When air raid sirens in the past have always sounded for tests and drills, this past experience may structure the respondent's interpretation to conclude that a present alarm is also a test or a drill. Of course, past experience can be both a facilitating and a debilitating factor in influencing the respondent's interpretation. In areas subject to recurrent disasters, a wailing siren coupled with high winds may lead a community resident to take immediate cover. Past experience may, on the other hand, lead the respondent to disregard the danger inherent in the imminent threat and seek no action. Disasters become "bench marks" in the lives of individuals, and future disasters are always compared to the effects of past disasters on the community. When people are convinced that the flood "couldn't be as high as in '38," immediate action may not result. This negative effect is illustrated in the following statement by an official following the flood in Fairbanks, Alaska in 1967.

Unfortunately in the Fairbanks area they do have a flooding condition almost annually, sometimes semi-annually. We try to talk to people and this happens. They will go out and will point to a tree stump over there and say that is where the floodwaters came to last year and there is where it was a year before and there the year before that. Don't tell us. We have been here many years and how long have you been here? It was a little difficult to convince them that they were in for a problem and they said, well, we will wait it out as we have many years past, but I don't think next spring if we say something about high water, I think we are going to get full cooperation.

Immediate perceptions are also likely to exercise influence on responses to a warning message. The reactions of other persons in the area, cues detected in the physical environment, the statements and actions of "officials," the opinions of family members, and other sources of immediate evidence tend to influence the interpretations community members take of an unexpected warning. Warning signals provoke such behavior as watching the sky, looking out of windows, telephoning friends and neighbors, and of crucial importance, turning on the radio or television. Confirmation is, therefore, the process of testing one or a series of possible interpretations against past experience and information directly available. Regarding the process of confirmation, Mack and Baker reach the following conclusion from their review of false air-raid sirens in Oakland, Washington and Chicago:

Probably the most conclusive general finding from the research experiences in the three cities is that hearing the warning siren alone is totally inadequate to stimulate people to immediate protective action. What people do, in fact, upon hearing the siren, is to seek additional information either to validate or to refute their own initial interpretation of the meaning of the signal.⁸

If confirmation is as crucial as has been suggested, three requirements for the successful completion of the warning process are implied. These

requirements would have particular relevance to those organizations charged with the responsibility of warning populations of imminent danger. The warning message, i.e., the information received by a population in the process of confirmation, should be immediate, consistent and "official."

The information should be immediate in that it should be available as soon as the alert has been given. In certain disasters there may be confusion on the part of the initiators as to whether or not the population should be warned. Often this confusion stems from ambiguity regarding the detected environmental cues. As previously stated, time is the essence in warning activities.

The information should be consistent in that it should be as free as possible from ambiguity and contradiction. For example, many individuals are confused by the terminology used in tornado warnings. The differences between a "tornado alert," "tornado warning" and "tornado forecast" are often unknown to the population. This ambiguity does not lead to a functional interpretation of the warning message. Indeed, the experience of the weather bureau in the Palm Sunday Indiana tornadoes (April 1965) offers an excellent example:

Very few of those interviewed in the tornado-affected areas were aware of the difference between a tornado forecast and a tornado warning. Accordingly, there was no real feeling or urgency even among most of those who actually heard the warnings on radio and television. The "warning" was generally interpreted as just an updated statement of the tornado forecast.⁹

Finally, the information must be "official" in that its source should be identified with organizations and individuals widely defined as "authorities." Roy A. Clifford reports a classic example of inconsistency and "unofficial" sources in disaster warning, the kind of information which leads almost inevitably to the loss of any warning value in the message.

In Piedras Negras (a Mexican town threatened by the rising Rio Grande) two loud-speaker cars "drafted" from a local theatre supplemented the four official units. It has been said that one of these cars cruised through the streets for a few minutes repeating, "An all-time record flood is going to inundate the city. You must evacuate immediately. (Pause) The _____ theatre is presenting two exciting features tonight. Be sure to see these pictures at the _____ theatre tonight."¹⁰

Of course, various factors such as "dead spots" in the dissemination of warning messages (certain people never do receive warning messages and may be outside of the range of sirens or away from the mass media) and the time that the warning message is issued (perhaps from the standpoint of warning, the ideal time would be between 6:00 p.m. and 7:30 p.m. when many individuals are listening to news reports on television and radio, though of course this variable is virtually uncontrollable) affect the efficiency of the warning process. However, in sum let us stress three points previously alluded to. It should

be noticed that all of these positions relate to the basic premise taken here that warning is a process of human communication.

First, a warning signal or an alert by itself is incomplete under most conditions. Simply activating the air-raid siren system does not convey a total warning message nor constitute the final step in the warning process. Past experience and immediate perceptions are two sources of information which will affect the initial interpretations persons make of warnings. These effects are most likely to focus at the hopeful end of the continuum.

Second, ideally, confirmation should be available immediately following the sounding of the alert. It should, in addition, be consistent and official. Because persons may turn to a wide range of sources for confirmation, it is unwise to rely on only one medium in issuing warning messages. As many channels of communication as possible, issuing immediate, consistent and official information, ought to be employed.

Third, from all that has been said, it is obvious that it is possible to place perhaps too much confidence in the mechanical elements of a warning system. The human elements of communication must be considered.

Having viewed warning as a process and system, we must conclude that while it is the function of warnings to convince those in danger of an impending threat and to offer ameliorative action, they are successful because communication takes place among community organizations, groups and individuals. No mechanical system -- no matter how sophisticated -- appears at the present time capable of replacing the human in this process.

Preparing for Impact

With the possibility of forewarning in some types of disasters, a limited amount of time may be available to avoid the worst consequences of the impact of a disaster. Much of the impact of an emergency on a community is significantly reduced if this prior warning is received and quickly communicated to the public, allowing time for proper preparations to be made. Assuming that the warning has been disseminated, evaluated and the respondents are prepared to take rational ameliorative preparations, these preparations may be conceptually divided into three general activities: (1) a continuing search for information regarding the disaster agent, (2) a readying of resources, both human and material and (3) the instituting of preventive measures to (a) lessen the impact of the agent and (b) lessen the consequences of the impact. These pre-impact activities are performed at both the individual and organizational levels of the community.

Continuing Search for Information Regarding the Disaster Agent

Prior to impact, there is an attempt to receive information continually about the impending disaster agent. Up-to-the-minute information concerning the type of agent, time of impact, its possible scope, duration and other variables is needed by organizations and individuals in the community if the

community is to take rational steps to lessen its destructive force. In a certain respect, this phase may be viewed as a continuation of the warning period.

Often the organizations who initially detected and disseminated the warning continue to search for information concerning the agent. While additional information may come from varied sources -- such as individual sightings of a funnel cloud, high sea waves, or approaching high water -- usually it is collected by "environmentally atuned" organizations such as the weather bureau. Also, organizations who have communication facilities and are in contact with their own personnel and other organizations -- such as police departments, radio and television stations, civil defense, etc., are often involved in gathering and disseminating this additional information.

For example, in flood situations the weather bureau constantly surveys the approaching flood waters and provides information on the impending disaster. During the Great Falls, Montana flood of 1964 the weather bureau issued the following bulletin at 11:00 a.m. on Monday:

Due to heavy rains over the head waters area of the Sun River during the past two days some flooding has already developed in the area above Fort Shaw. It will not reach the Great Falls area until about noon Tuesday. Further bulletins will be issued as soon as definite information from Gibson and Diversion Dams becomes available.

One hour later, at 12:00 noon, a second, more specific bulletin was issued:

The overflow over Diversion Dam is now considerably higher than was ever previously recorded. Serious major flooding will occur at all points downstream to Great Falls. Overflow will begin in the Great Falls area about noon Tuesday, reaching levels higher than the 1953 flood Tuesday night or Wednesday morning. Further bulletins will be issued as additional information becomes available.

As was mentioned, organizations which are normally involved in receiving and disseminating information and have relationships with other organizations as a part of their normal day-to-day tasks may also provide information regarding the disaster agent. The following example illustrates how one radio station provided this information during a tornado. This excerpt from their broadcast in which two telephone messages are employed to pinpoint the location and direction of one tornado illustrates what are apparently typical sources of this information and the use to which this information can be put:

Radio: This gentleman on the other telephone line, you say that you have sighted the tornado?

Man: Yes, about one and a half miles north of Wayzata on 101. We were down in our basement when the twister went over. Three windows were broken.

Radio: About a minute and a half ago?

Man: Yes.

Radio: We can add Hamel to our take-cover area right now?

Man: Yes, you should.

.....

Radio: We have a report from a sheriff. Where are you, sir? You want to give us your location?

Sheriff: 101. It just went through going north about two minutes ago.

Radio: Give us that location again.

Sheriff: County Road 6 and State Highway 101, about a mile north of Wayzata.

Radio: Okay, and do you see any damage at all?

Sheriff: No, sir, we do not. There was quite a bit of fire from power lines in the sky, however, we did not see it touch down. This was a funnel at approximately four to five hundred feet in the air, moving in a northerly direction. Very high wind.

Radio: That more or less puts it in a line towards Maple Grove and Anoka, is that right? . . . That's the same one that went past . . . the north end of Minnetonka there and also the gentleman who called in north of Wayzata. I'm looking at a map that puts it in the vicinity of -- perhaps dead even with Hamel, but not as far west as Hamel.

During this stage of gathering further information on the agent, various communication channels are utilized in order to disseminate it to community organizations and individuals. Some of these channels are pre-existent, others may develop "on-the-spot." Many organizations with disaster-relevant tasks, such as civil defense, police, fire, public utilities, weather bureau, city government, public works, National Guard, Red Cross and Salvation Army, develop

interorganizational relationships for the exchange of vital information during this period. These communication channels may take various forms including telephone "hot lines" and the placement of "liaison officials" with other organizations.

To aid further the coordination of the community response, ad hoc meetings are often held at which representatives from organizations such as those listed above gather, exchange information and attempt to coordinate community action. For example, in the previously alluded to Great Falls, Montana flood of 1964, three top-level meetings were called before the flood crest arrived at Great Falls at midnight on Tuesday. The first meeting occurred at 4:00 p.m. on Monday at the request of the city engineer. Present were the acting mayor, county commissioners, county surveyor, county sheriff, and city department heads, as well as representatives of the local civil defense, Malmstrom Air Force Base and the Montana National Guard. Here the ground work was laid for the initial response: warning, evacuation, sandbagging, authority and the dissemination of public information. When the state civil defense representative arrived at Great Falls early Tuesday morning, he found the local civil defense staff overloaded with work and finding it difficult, for instance, even to process requests. After several hours of assessing the situation, the state civil defense representative called for a meeting of state, county, city and military officials in the area, "to outline the scope of the approaching problem, what the probable results would be and to recommend a coordinated course of action." The Corps of Engineers, the Red Cross and state civil defense, who were not present at the first meeting on Monday, all had representatives at this meeting. Again information was exchanged, and problems of authority, evacuation and shelter programs, and interorganization communications were discussed. At nightfall, with the rate of rise in the Sun River increasing rapidly, another top-level meeting was held. Present at the third meeting were the acting mayor, the county sheriff, and the city engineer, state and local civil defense officials, liaison men from the National Guard, and representatives from the Air Force disaster control group, the Red Cross and city police, as well as members from boat clubs in Great Falls. Once more, the exchange of information and communications problems were the main issues for discussion.

Readying Resources

Certain organizations may have developed "disaster plans." These plans normally include provisions for the allocation of personnel and resources, specific individual task assignments, instituting an "emergency authority structure," increasing internal and external communication, etc. While the advantage of having a pre-impact plan in aiding coordinated response is obvious, it must be added that, when these plans have been based upon past disaster experiences of the organization, they may be unable to handle effectively a more devastating agent. When the planning and capabilities of the organization are based and contingent upon past demands, it may find its capabilities insufficient for meeting new, unexpectedly high demands.

Many organizations, however, do not have pre-impact plans and must ready their resources and personnel on an ad hoc basis. Additional shifts may be called back to work; equipment readied, and some "emergency control center" may be instituted within the organization.

At the community level of analysis organizations may become involved in such activities as establishing and stocking shelters. Often, outside personnel, such as the National Guard and/or a locally based military unit, may be called upon to offer assistance to the community. Communication channels with areas outside of the community are secured.

In certain communities, a "disaster control center" may be established in order to coordinate the community's preparation for and response to the impending disaster. Representatives of the various community organizations with disaster-relevant tasks often assemble at such a point where information, communication and decision making can be centralized. Often a pre-existing facility, such as the command center or a specially designed "war room" in the police department, is utilized by the community to serve as this center. Sometimes, however, a center must be established on the spot. In this case, the local telephone, telegraph, mass media, or military organizations are often responsible for providing telephones and other communication facilities for the center.

Instituting Preventive Measures

Measures to Lessen the Impact of the Agent

In certain disasters it may be possible to take direct action to limit the damaging impact of the agent. Due to the amount of resources, techniques and personnel normally required to institute these measures, this activity is usually the task of public, community organizations. For example, in floods sandbagging or diking is often started in an attempt to control the flood waters. Flood gates may also be installed. In an epidemic a program of inoculation may be begun in order to immunize as much of the population as possible. Drought may be alleviated by "cloud seeding," etc. While certain of these activities may be carried out by individuals acting alone -- such as a man drenching his home with water in the midst of a forest fire -- usually organizations with public health and safety orientations become involved.

Measures to Lessen the Consequences of Impact

Measures may also be undertaken to limit the consequences of the impact agent, while not directly affecting the agent itself. In this instance, both public organizations and individual residents may take part in the preparations. In the case of hurricanes, objects which might be blown away can be secured or placed in a sheltered place. Large plate-glass windows may be boarded up or taped to withstand high winds. Hanging objects such as traffic lights or signs may be taken down. Supplies such as food, fuel, as well as substitute heating and cooking arrangements may be obtained. As mentioned, much of this activity involved individuals and family groups or employees of organizations acting in terms of their own "self" interest.

In certain types of disaster events, evacuation is a major way of preparation to avoid the worst consequences of impact. Because of the demands of this task, organizations with special control and disaster-aid functions are often directly involved in any evacuation procedures. The decision to evacuate

furthermore comes from local leaders at the organizational level. For example, prior to many hurricanes in the southwestern United States, people evacuate from low-lying areas near the coast. In specific disaster-prone areas, this tends to be somewhat regularized and becomes more organized. For example, prior to Hurricane Carla many residents of coastal communities in and around Galveston evacuated. Estimates are that approximately 200,000 refugees spent at least part of their time away from home at one or more of 650 designated shelters where 20,000 people sought to help them. Those who sought public shelter, however, were only about 20 to 25 percent of the total. The total number of refugees probably numbered around a million. Private homes in inland communities provided shelter for about 60 percent. Most of these were homes of relatives. Hotels and motels cared for an additional 15 to 20 percent.¹¹ One of the reasons for this rather massive evacuation was that the same general area had been hit by a hurricane some five years earlier which created intense destruction. In the subsequent years, planning for future evacuation had gone on among community organizations which resulted in the development and designation of shelters. In addition, a long warning period did allow sufficient time for evacuation to take place. In addition to hurricanes tornadoes allow some time for seeking shelter to avoid the worst consequences, and on the individual level many people may be able to "take cover." While the greater unpredictability of tornadoes militates against evacuation, it does allow for the possibility of some protective action.

The following illustration shows how some of the above-mentioned preparations may require the extensive involvement of many different organizations, both inside and outside the impacted community.

In 1955, the two cities of Marysville and Yuba City, on either side of the Feather River, were threatened by rising waters. The State Division of Water Resources and various levee commissions patrolled two hundred miles of levees. Hydrologic data and information throughout northern and central California were collected by means of a radio steam gauge network. Constant telephone contacts were maintained with various agencies and personnel in the field. The Marysville Levee Commission called two thousand troops from Beale Air Force base for assistance. Workers attempted to strengthen the levee with thousands of sandbags. Trucks hauled fill material. Certain sections of the levee were strengthened with improvised construction.

As the threat continued, local officials in Marysville ordered the evacuation of low-lying area. Residents left quickly and many proceeded to Beale Air Force Base in cars, trucks, and buses. Further warnings were issued by the Marysville City Council, and after a break in a part of the levee, the decision was made to evacuate Marysville. Water spouts appeared at the base of the levee in spite of the efforts to seal them with sandbags. Yuba City officials ordered evacuation of

lower sections of the city and the Sutter County Sheriff evacuated residents of the threatened outlying areas. When the flood threat had diminished, city officials told residents they could return.¹²

Disaster Agents

Now the community has been warned; preventive pre-impact measures have been instituted; the community awaits the impact. But, what type of disaster will occur -- hurricane, flood, tornado, earthquake, seismic wave, explosion, volcanic eruption? While these are all separate types of disasters, it is possible to generalize from them and enumerate characteristics among which these agents vary. It is known that these characteristics of the agent will have differing effects upon the physical environment. Furthermore, an alteration in the physical environment will have social effects for the community. Therefore, these characteristics of the agent will have implications for the types of community tasks which are created and the ability of the community to perform them effectively. Some of the characteristics which relate to the nature and dimensions of the task are:¹³

1. Disaster agents differ in their frequency.
Certain communities are located in disaster-prone areas. Earthquakes are more likely to affect those communities located along a geological fault. Those communities located in certain sections of the midwest are often hit by tornadoes. Communities on coastal areas in the Southeast and Gulf Coast regions are more likely to be impacted by hurricanes. Where the occurrence of a specific type of disaster agent is frequent because of the location of the community, the area may develop institutionalized patterns of response.
2. Disaster agents differ in their predictability.
As noted in discussing warning, certain disaster agents provide a greater opportunity for prior warning, such as tornadoes, hurricanes and floods. Furthermore, recent advances in meteorology have provided the opportunity for greater prediction.
3. Disaster agents differ in their controllability.
During the discussion of pre-impact activities, it was noted that measures may be instituted to affect the impact of the agent directly. Fires and floods can be controlled. Experimental and theoretical work is being undertaken regarding the possibilities of preventive action on severe storms and earthquakes.
4. Disaster agents differ as to their cause.
The basic distinction here is between manmade vs. natural disasters. Such a distinction may have important implications for subsequent action. As noted, in natural disasters a high degree of community consensus is witnessed after impact, highlighted by altruistic behavior. On the other hand, in manmade disasters, while

there is also concern, there is considerable resentment toward the presumed human source of the disaster. Often there is an attempt on the part of the community to afix blame for the event. The causal agent has objective meaning for the tasks to be performed by a community. Boats are needed in a flood, while not in a tornado.

5. Disaster agents differ in the speed of onset.

It is helpful to visualize three different types of onset -- rapid, gradual and repetitive. In the case of "rapid onset," the length of time between the pre-impact phase and the beginning of the emergency period is very short because the agent strikes very rapidly. The tidal waves which struck Crescent City, California in 1964, or the Aléo fireworks explosion in Houston, Texas in 1953 are examples of this type of onset. "Gradual onset" would refer to a situation in which the effect of the agent on the populace was very gradual but ever-increasing in intensity until the emergency period was reached. Floods and epidemics are examples of this type of disaster. There are, however, other types of disaster agents that do not strike with a single impact. They may "repetitively" occur over a period of time, but are not so far apart that one would refer to them as separate disasters. For example, many earthquakes produce several shocks over a period of time. The speed of onset has obvious consequences for the community's response to the disaster and the types of tasks it must perform. For instance, while "gradual onset" may allow more time for pre-impact activities and preventive action, in a "repetitive" disaster, precautions must be made to protect the community from further destruction while immediate post-impact rescue and rehabilitation work is proceeding.

6. Disaster agents differ in the length of possible forewarning.

One must not confuse the speed of onset with the length of forewarning. The two are not necessarily related; it is possible to have either a long period of warning or no forewarning associated with each of the three modes of onset. For example, prior warning existed pertaining to the exact time the first tidal wave was to reach Crescent City, yet the impact was rapid.

The length of forewarning is, of course, important because it allows the opportunity for protective action. The degree of community disorganization may be inversely proportional to the length of forewarning in disasters with rapid onset. Problems of communication and coordinated response are heightened in such a situation. This situation seemingly results because without forewarning and with rapid onset, organizational activities are inhibited and the predominant adaptive response after impact comes from the activities of individuals. Isolated individuals tend to operate within their own limited sphere of action. They tend to react to the needs of the immediate situation, without feeling the necessity for communicating their needs and knowledge to others and without assuming authority for the total situation. When

organizations are mobilized, however, their greater potential necessitates communication and authority to become effective. Interorganizational communication and authority becomes necessary for effective action, and the avoidance of a duplication of effort.

7. Disaster agents differ as to their duration.

Disasters may be grossly conceptualized as being of limited duration or of prolonged duration. A limited duration would be illustrated by an explosion. If there are no secondary explosions, the impact is over. On the other hand, certain disasters, such as earthquakes, epidemics, fires and floods, may extend over several days or months.

8. Disaster agents differ as to their scope of impact.

A disaster whose scope is more diffuse throughout the total community tends to be "more" serious than one which is localized within the community. A disaster which is localized may affect certain population groups within the community and/or result in the loss of certain material structures within a delimited area. On the other hand, a diffused disaster would be characterized by single or multiple impacts which result in greater disruption of the community. Community coordination remains relatively unaffected and the impact area provides a locus for activity in the localized disaster or one of limited scope. In the diffused type, however, since existing patterns of community coordination are disrupted, the delay in developing new patterns of adaptation and coordination creates great delays in rescue and rehabilitation.

9. Disaster agents differ as to their destructive potential.

This obvious fact is often forgotten by many within and outside the impacted area. Even though a disaster agent may have great potentialities for personal injury, often many disasters involve primarily property loss. A tornado might destroy a wide swath across a community but, because of its timing and the protective action taken by community members, personal injuries are minimized. In some instances, a false inference by outside agencies as to significant damage evokes types of extracommunity aid which are not relevant. This convergence of unneeded material and personal aid creates additional problems for overworked community agencies attempting to cope with realistic problems. Often unwanted medical supplies, clothing, food, shelter provisions, building materials, cots, blankets, and other emergency supplies come into the community in such amounts that a great deal of effort is required to process the material. The same problem of excessive material convergence can also be manifested in a disaster with exceptionally high levels of personal and material loss. In the Vaiont dam disaster in Italy in 1963, practically the entire population of the community was killed, and one of the problems during the rehabilitative period was deciding what to do with many shelter provisions and clothing which were rushed to the scene from outside sources.

In general, the greater the destruction, either persons or property, the more organizationally relevant problems will be, and it may be postulated that the degree of damage is inversely proportional to the speed with which restoration of community equilibrium may be accomplished.

Ecology of the Disaster Area

Wallace has represented disaster impact in space as a series of concentric circles.¹⁴ Such a spatial pattern provides certain clues as to the behavior of populations with different kinds and degrees of involvement in the impact. Obviously, the damage area can vary in shape or may be represented by multiple impact zones; therefore the circularity of the scheme should not be taken literally. (See Figure 5.) The impact zone is the area of primary destruction to property and life. This area is divided into an area of total impact and an area of fringe impact. Total impact refers to the area where the disaster agent has struck with the full severity characteristic of it in a particular event, and not to total destruction. The fringe area usually involves minor damage and few or no serious injuries. It is often difficult to distinguish the boundaries of these two areas, and the criteria for drawing these boundaries will vary with the destructiveness of the event.

The population and the area in the total impact zone is the object of primary concern in the activity which follows. Individuals in the total impact area are obviously involved in the disaster -- they have little choice. Those in the fringe zone, however, while being affected, have escaped destruction and parts of this population are among the first entrants into the total impact zone and take part in rescue activities and/or become spectators.

The filter area is the region immediately adjacent to the impact area through which both supplies and information enter and leave the impact area. There is likely to be transportation and communication convergence at this point which jams the points of exit and entry to the impact area. In these ways, it tends to act as a filter, screening out certain types of traffic and information. The population in these areas often supplies needed services such as communication, first aid, rescue, etc., to the impact area before organized community aid arrives. Volunteers from this area often initially perform filter functions. Later, as the perimeter of the disaster area and the filter function becomes institutionalized, community officials accept these functions.

The areas of organized community and regional aid are only selectively affected by the impact. Services are eventually carried out by organizations with disaster-relevant functions, such as police, fire, hospital and welfare agencies. The boundaries beyond the community are apt to be vague, and may become distinctions between levels of administrative authority because any major disaster is likely to involve communications, transport, and industry in all parts of the country.

FIGURE 5

SPATIAL REPRESENTATION OF A DISASTER EVENT



Source: Adapted from Anthony F. C. Wallace, Tornado in Worcester: An Explanatory Study of Individual and Community Behavior in an Extreme Situation (Washington: National Academy of Sciences-National Research Council, 1956).

Conclusion

We have noted the extremely complex nature of the social factors involved in warning a community of an impending disaster and in preparing the community for the impact. Regarding warning, the warning process was viewed in systemic terms; the interrelationship of all the elements in the system illustrated why warning does not end with the issuance of a warning message or the sounding of a warning device. The social aspects of the warning process are at least as important as the technological elements. It was noted that there are generally four types of activity involved in a community's preparation for impact: (1) a continuing search for information regarding the disaster agent, (2) a readying of human and material resources, (3) instituting preventive measures to lessen the impact of the agent, and (4) instituting preventive measures to lessen the consequences of the impact. Finally, the characteristics of disaster agents were analyzed, and the spatial characteristics of the disaster area were described.

In Chapter IV we will turn to a discussion of post-impact behavior.

FOOTNOTES: Chapter III

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2. Williams, ibid., p. 80.
3. Moore et al., op. cit., p. 13.
4. Weather Bureau Survey Team, Report of Palm Sunday Tornadoes of 1965: April 11, 1965 (Washington: U.S. Dept. of Commerce, Weather Bureau, 1965), Annex I, p. 1.
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7. Williams, op. cit., p. 100.
8. Mack and Baker, op. cit., p. 39.
9. Weather Bureau Survey Team, op. cit., p. 6.
10. Roy A. Clifford, Informal Group Actions in the Rio Grande Disaster (Washington: National Research Council, February, 1955), p. 27.
11. Moore, op. cit., Table 44, p. 94.
12. Adapted from William W. Stiles, "How a Community Met a Disaster: Yuba City Flood, December, 1955," The Annals of the American Academy of Political and Social Sciences, CCCIX (January, 1957), 160-169.
13. Adapted from Russell R. Dynes, Organized Behavior in Disaster: Analysis and Conceptualization, Disaster Research Center Monograph Series (Columbus, Ohio: Disaster Research Center, 1969), chapter III.
14. Anthony F. C. Wallace, Tornado in Worcester: An Exploratory Study of Individual and Community Behavior in an Extreme Situation, Disaster Study No. 3, Publication 392 (Washington: National Academy of Sciences-National Research Council, 1956), p. 3.

CHAPTER IV

RESCUE AND CARING FOR CASUALTIES

Introduction

The community has been struck by the disaster agent. In the preceding chapter, procedures regarding warning and preparation for the impact were discussed. In the present chapter, we will initiate the discussion of community activities associated with the post-impact period. Barton has noted the emergence of an emergency social system in the immediate post-impact period.

The first few hours after a sudden physical disaster therefore form a period with peculiar characteristics, deriving from the crushing overload of needs and the life and death importance of rapid action. The time lags of normal social processes are far too long to permit the situation to be handled normally. An emergency social system has to be created to fill the "social vacuum" and meet the massive disaster needs with a flood of disaster services. People and equipment must be mobilized to do rescue work, provide medical care, give shelter, food and clothing to those who have lost theirs, reassure or reunite primary group members, and repair damaged public services essential to the community variables. At the same time the essential maintenance activities must be continued, including the care of dependent children and the regular feeding of families, as well as maintaining public order and public utilities output.¹

In this chapter, we will focus upon the specific tasks of rescue and caring for casualties that are elements in this emergency social system. It should be noted that these tasks are considered important because they are inherently related to the high priority placed on the preservation of life after the impact. Once again, our procedure will be to determine (1) what tasks are to be performed and (2) what organizations normally are involved in their performance. Of course, since a community is not simply the sum of its organizations, the actions of individuals which affect the community response will also be noted. (The reader should note that this individual action will be particularly evident with regard to rescue activities.)

Rescue

The impact is over. The degree of destruction that the community has undergone depends upon various factors such as the destructive force of the agent, the scope of the impact, the length of possible forewarning, the effectiveness of pre-impact activity on the part of the community, etc. If these factors have combined fortuitously for the community, only slight

property damage may have resulted. Of course, at the other extreme, some communities such as Pompeii and Vaiont, Italy have been totally destroyed.² Immediately after the impact, however, the loss to the community in property and lives is not yet known. In the case of property, it may be weeks, months, or even years until complete information is available. The preservation of life, however, has been previously posited as an important function for the community. Therefore, immediate action is taken to rescue survivors from the impact area, to survey the extent of damage to the community, and to inter the dead.

The first question to be posed then is: Who becomes involved in rescue activity?

One of the most consistent findings in studies of disasters is that the initial rescue work is done by individuals who are in the impact area. Form and Nosow offer the following conclusion in their study of the Beecher tornado.

The outstanding fact of this study was that the victims performed most of the rescue activities themselves during the first two or three hours after the tornado had struck. On the other hand, their rescue activities were facilitated by countless unnamed others who provided complementary functions needed to complete the rescue. An analysis of the behavior of the individuals and organizations involved in the disaster activities in Beecher suggests that all of them gave some momentum to the restoration of community equilibrium. It also suggests that formal rescue and rehabilitation organizations cannot be expected to facilitate this task unless they enlist at least the passive cooperation of the resident population.³

It should not be too surprising that "victims" themselves perform most of the rescue work. To initiate rescue activity immediately after the impact, one has to be in the total impact area. Those individuals in the area can obviously take part in searching for and rescuing survivors. Soon, however, they may be assisted by others coming in from the fringe area. People who live in the impact area have more accurate knowledge about what potential damage has occurred, which individuals in the area might need help, and the location of immediately necessary equipment. This knowledge of the area proves extremely valuable in rescue activity as the following statement by a Salvation Army official illustrates.

Major _____ of the police department [and I] then moved into the area where the houses were leveled to the west of Gage Boulevard and to the south of 29th Street. . . . [We had] two objectives in mind. First, to check with the neighbors about anyone trapped or hurt, neighbors themselves can usually tell us whether their neighbors are hurt. . . . Second, to take

neighbors that would know their adjacent people coming in to the impact area to eliminate outsiders coming in as a temporary guard until help could arrive on the scene to rope the area off and police it off. . . . It was quite amazing; that's what I'm referring to, the fact that people have the ability to take care of themselves in a given situation. The neighbors themselves were real organized.

In many ways, the family might be considered the basic rescue group within neighborhoods of communities. As an organization, the family members have relationships and obligations to one another which tend to be clearly defined. In addition, a family's integration into the neighborhood structure often results in an identification with the neighborhood and a knowledge of its physical layout. Form and Nosow, in their case study of the rescue activities of the Rudenko family in the Flint Beecher tornado, provide information concerning the types of tasks those in the impact area often perform.⁴ Among the rescue tasks performed by this six-member family were (1) the rescuing of the wife of the father's best friend, (2) aiding a family to get to a hospital, (3) locating the body of their neighbor, (4) giving shelter and care to the 15 to 18 members of two families, (5) aiding many unknown people in the area, and (6) working with volunteers from outside the impact zone later in the emergency period.

There were a number of factors, however, that should be underscored in regard to this family's activity. First, the time of the event was such that most of the family members were at home. Second, the family unit at the time included a visiting son and his family, so energy did not have to be expended to determine their safety. Third, the family home was not damaged. (These first three factors provided somewhat optimum conditions for the engagement of the family in rescue activity.) Fourth, a rather strict division of labor was adhered to along sex lines. The women stayed at home and cared for the children and the injured people whom the men sent to the house. The men remained in the impact area, performing immediate rescue functions, especially looking for those whom they knew were in the area and whose homes were destroyed or damaged. Fifth, although the family constituted perhaps a most highly integrated and most enduring rescue unit, it cannot be conceived of as a team having a high amount of internal cohesion, permanence, and leadership. Rather, certain tasks are selected by the family members to be performed (search, rescue, transportation, calming, first aid, care of children, and checking property). At times they worked with each other, at times with neighbors or friends and at times with strangers, state police, ambulance drivers, and others. There was no leadership or authority in the field or home.

This pattern of search and rescue being performed by the survivors in the impact area has been found in most disasters. For instance, in the Alaskan earthquake, most of the victims of the impact were found and removed as darkness developed on the first night. This rescue activity was accomplished by those in the area itself. Only later were organized search and rescue teams under the direction of civil defense dispatched.

Many factors affect the possibility of an individual's participation in rescue activity. Where the individual is at the time of the impact with respect to his family, home, and neighborhood obviously affects the likelihood of his involvement. As a corollary, the knowledge that the individual has about the fate or the extent of safety or injury to persons significant to him must be considered. (If one has no knowledge about the welfare of these significant others, energy may be expended simply in locating them.) Other factors include (1) the extent of injury to himself and to significant others, (2) the degree of identification of the individual with the community, (3) the relevancy of the individual's training for emergency situations, including occupational skills, and (4) the individual's membership in emergency-oriented organizations. These same factors will greatly determine the effectiveness of the rescuer's activity.

Once the individual is involved, observations of rescue activity in disasters tend to show a relatively constant pattern. Those individuals who are in the impact area and who are uninjured or have relatively minor injuries define as their first task helping those who are of most concern to them. Earliest activities are looking for and aiding specific family members, friends, and neighbors. Form and Nosow indicate that, during the initial phase of the emergency period, people orient themselves to the search for others, informing others of their own safety, giving first aid, seeking aid, providing shelter and clothing, calming victims, caring for children, etc. In those cases where family members, friends, and neighbors are unhurt, and the individual is aware of their safety, activities turn toward others in general. Individuals rescue and aid other people whether they know them or not. Activities in this stage concern clearing debris that hinders transportation, performing first aid, transporting victims to aid stations, seeking information on the extent of the disaster, etc. The most important point, however, is that rescue activity seems to start with specific persons and moves to helping others more generally. Throughout, there is a minimum of orientation to self and minimum preoccupation with one's own problems. Only later, after individuals have exhausted the possibility of helping others, even those whom they do not know, do they turn to their own problems. While all three of these orientations -- toward specific others, others in general, and self -- do occur simultaneously, preoccupation with self is less frequent at all times.

Because of the above pattern, "isolated" individuals are often "missed" in the initial rescue activity. The initial orientation toward specific others tends to exclude those victims within the impact area who are not embedded in the kinship and neighboring structure of the locale. These "isolated" individuals are often helped after the other more integrated victims. Because of this time lag, those individuals who come into the impact area from the fringe area do provide an important service. Inasmuch as these individuals are not bound to seeking and aiding specific others and since they do not have to be concerned with an assessment of their own personal damage and injury, they are able to approach rescue activity on the basis of need -- i.e., they will be able to offer aid to whoever needs it -- rather than on the basis of relationships. Furthermore, by the time that many of those from the fringe area come into the impact zone, the attention to specific others tends to be

"over" and the energies of those in the impact area along with those in the fringe can be directed toward a more systematic and perhaps more rational activity.

As was previously mentioned, interorganizational channels of communication may have been developed prior to impact. If these lines of communication are not destroyed after the impact, they may prove to be extremely valuable in coordinating community search and rescue activity. As a part of the initial rescue activity, lines of communication are also developed between the impact area and the local emergency organizations. Notification of the event and requests for aid are often passed on to these organizations. Such notifications may come about in a variety of ways: phone calls, observations by some organizational member, etc. Generally, however, at such organizations as the police department, fire department, public safety department, Red Cross, National Guard, etc., there will be a convergence of information and inquiry.

These organizations become gradually involved. (Of course, members of these organizations may have been involved since the initiation of rescue activity. These individuals, however, may not have been acting in terms of their roles as organizational members, i.e., "policeman," "fireman," etc. They probably were involved in terms of their roles as "husband" or "neighbor." Therefore, when a member of the volunteer fire department stops on his way to the fire station to pull a small boy from under a tree, one cannot state that the fire department was involved.) These emergency organizations are first involved as somewhat supplemental to the informal rescue activity already in progress. As Form and Nosow state in the following analysis, the effectiveness of the rescue activity of an organization may depend upon the flexibility of its structure and its ability to adapt its procedures to the ongoing activity.

An examination of the activities of the organizations that arrived on the scene soon after the impact reveals that they were successful to the degree to which they fitted themselves into the rescue activity already established by the local groups. Members of formal organizations, such as the volunteer firemen and the locally stationed state police, who functioned as individuals and not as organizational members, elicited praise from community members for their cooperation. The organizations whose structures could not be integrated into the local rescue activities found themselves objects of hostility and resentment. It appears that the very nature of the social milieu of crises, by its unpredictability, militates against the effective functioning of organizations designed to operate in noncrisis situations. This is also true for outside individuals who are not trained for rescue work, as well as for organizations and their personnel. . . . /Basically, however, organizations had to integrate their efforts into the already ongoing rescue system that had emerged.⁵

As time goes on, these organizations come to dominate the rescue stage, taking over the tasks previously performed by individuals. There are numerous factors that tend to call forth the organization of rescue activity. First of all, the search tasks of "search and rescue" activity must be accomplished -- and obviously not overlooked. For effective community response, there is a necessity for developing an overall picture of the disaster situation. This search for needed information usually cannot be done by isolated and uncoordinated individuals since their observations would of necessity be limited. Furthermore, the tasks which are needed to be accomplished require personnel and material resources which no aggregate of individuals possesses. Finally, individual energy levels cannot sustain the activity as well as can organized forms of cooperation and assistance.

In certain types of disasters, the degree of organizational involvement is greater than in others. Furthermore, in areas which experience recurrent disasters of a specific nature, i.e., floods, earthquakes, etc., patterns for organizational involvement may become institutionalized. For instance, in Japan where earthquakes are very common, the Japanese government has developed highly detailed, specific plans for disaster activities. The Red Cross in Japan is primarily involved in medical rescue activity. Of course, some of the rescue tasks are performed by individuals in the initial stages of the post-impact period as they are in the United States.

In the United States, those areas which experience recurrent flooding also often have developed plans for the involvement of organizations in search and rescue activity. This preparation can be most visibly noted in those areas which have developed a "disaster subculture." The following case study of a flood shows how organizations may be ready to respond to rescue activity.

Early in March 1964, the Ohio River Valley was subjected to very heavy rains. After several days of almost continuous downpour the Ohio River reached the flood stage of 52 feet in Cincinnati. This signaled the beginning of the worst flood in that area in 19 years. Thousands were left homeless as a result of the flooding from the river and several of its tributaries. Red Cross officials estimated that about 110,000 persons were directly affected by the floods in a five-state area. At least nine deaths were attributable to the high waters. Total property damage went beyond the \$100 million figure.

The area has experienced recurrent flooding, and has responded by developing an elaborate set of emergency stand-by mechanisms that are geared to minimize the disruption of community life. Local organizations have instituted and maintain complex disaster plans and operations which maximize interorganizational cooperation in the face of threat. Such agencies as the police, fire, Red Cross, and public works department have emergency flood procedures which have been

developed over the years and which are subject to frequent review and revision. These procedures include among other things plans for organizational involvement in search and rescue activity.

The police department normally performs a coordinating function in rescue work. The department has little water rescue equipment, so it generally does not get directly involved in rescue work. Instead, it tends to operate in a coordinating capacity between those who need assistance and those who have the necessary equipment to render it. During a flood, the police keep lists of people who own boats and are willing to be called upon to assist in rescue work. As residents in flooded areas call for aid, the police relay the request to the listed boat owners. This system was reported to have been used successfully by the police for several years.

The fire department also works closely with the police department. The fire department is the organization which assumes most of the responsibility for water rescue during floods. To aid in the performance of the duty, the department has three amphibious ducks which can operate in deep water, and a number of smaller boats. Initially, the fire department shuts off all fire hydrants in areas which will receive flood water, thus preventing a loss of city water if hydrants are damaged by floating objects and debris. As the flood stage increases, small boats are placed on fire apparatus and boat details are organized. The organization is intensively involved in rescue missions.

The Hamilton County Civil Defense Office was also involved in rescue activities. The major activities were centered in Newton, Ohio in Hamilton County. On Tuesday, CD began coordinating water rescue activities in Newton. CD also operated one of the county's amphibious ducks. About 70 families were rescued by this vehicle.

The rescue stage of the disaster event may very well be the most problematic period of the entire disaster. There are a number of reasons why this is true. First, the rescue stage occurs early in the time sequence of the disaster. It has, therefore, to proceed during the time that the community is assessing the consequences of the event itself. Of course, search and rescue activity by its very nature contributes to the task of assessment. The "search" aspect of search and rescue activity is a search for information, as well as survivors. Much of the information gained on the scope and destructive force of the agent through search and rescue activity aids further community response.

Second, since it involves threat to human lives and the possibility that lives may be saved, there is a sense of urgency present which sometimes militates against rational organization. Certain disasters of a slightly "unique" nature, such as the nursing home fire in Fitchville, Ohio, in which the scope of the impact was highly limited, but extremely short and devastating, illustrate this point. In Fitchville, the urgency of the situation, plus the short time available for rescue activity because of the continuing impact of the fire, resulted in the lack of coordination. In other disasters, the same dysfunctional effect of urgency has been found to mitigate against more coordinated activity. For example, in the Montreal apartment house explosion of 1965, volunteers and personnel began rescue work immediately. There was, however, some difficulty in establishing exactly who was in charge of rescue operations. Some reports suggest that, at least officially, the mayor of LaSalle and, under him, the LaSalle police-fire department directed the rescue operations and that the Montreal Civil Protection directed the welfare operations. There were indications, however, from members of the Civil Protection and the Red Cross which suggested that Civil Protection coordinated both the rescue and welfare operations. Lack of consensus regarding overall authority may limit the effectiveness of rescue activity (although it did not appear to in Montreal).

Third, since individuals are primarily involved in the initial stages of search and rescue activity, the operation tends to be somewhat haphazard and non-systematic, as the above account illustrates. This situation prevails because individuals act as individuals within their own immediate environment of family and neighborhood relations. More systematic attempts by the organized community later can never be certain whether their activities will duplicate earlier individual efforts, or the location where individual efforts have not been sufficient. The Alaska earthquake of 1964 again offers an excellent example.

Search and rescue activity began immediately after the shaking subsided at about 5:40 p.m. on Friday and continued throughout the night and into the next day. Rescue activity, however, was not coordinated from an overall standpoint until early Saturday morning when the city civil defense director appointed a volunteer to take charge of various volunteer search and rescue groups. Even after this appointment, there was search and rescue activity apart from the official CD groups, and many agencies external to the community, such as the Alaska Rescue Group and the Army, took part. This situation resulted in a duplication of effort. For example, the Turnagain area was searched at least three different times by various groups. Individuals helped survivors climb out of the debris immediately after the impact. The area was searched completely before dark. At 11:00 p.m. six other teams again went through the area. Finally, the next morning another search was made.

Fourth, since both individuals and organizations become involved, it is important for organizations to be able to utilize effectively the ongoing individual activities. This aspect of rescue activity has been previously discussed. At this time, let us only point out one other factor in this process of fitting organizational behavior to the already present individual efforts. Since emergency organizations are at this stage of the post-impact period in the process of mobilization, shortages of organizational personnel can often be filled by those already involved in rescue activity.

Fifth, and perhaps most important, we have previously discussed situations in which certain organizations are specifically authorized or expected to become involved in search and rescue activity. In most disasters, however, search and rescue activity is seldom considered to be the major responsibility of any existing community organization. As a result of the expansion of the citizenship role and the high priority given to this type of activity in disaster situations, many organizations do become involved initially in search and rescue. After this initial involvement, however, many of these organizations tend to withdraw to their more traditionally expected and accustomed tasks. For example, the police and fire departments may become involved, but gradually withdraw to their more traditional control and fire functions. This withdrawal may result in certain aspects of the search and rescue tasks being delayed or overlooked. These tasks then have to be assumed by other organizations with less initial involvement.

Caring for Casualties

Almost all disasters take their toll in dead and injured. The primary goal of search and rescue activity is, of course, to find those who are injured and quickly offer them medical aid. The community must, therefore, institute some measures to care for the casualties of the disaster. In this section we will be considering some of the social factors involved in this activity. We will discuss certain of the specific tasks involved in caring for the casualties, and consider some of the organizations that become involved in performing these tasks -- tasks which are given such a high priority because of their relationship to the value of preserving life. While it would be pleasant only to consider the "injured," it is one of the facts of disasters that people are killed. This chapter will end, therefore, with a brief discussion of the community problems involved in caring for the dead.

The Injured

The rapid removal of an injured person from the impact zone and the speed with which he can be offered medical care may be the difference between life and death. Those involved in rescue work often feel under a great pressure to "get these people to a doctor!" What is necessary, of course, is some means of transporting casualties from the point of rescue to medical aid.

One method of transportation is by ambulance. Various organizations in the community -- hospitals, police and fire departments, mortuaries, and others -- utilize ambulances in their day-to-day activities. In the disaster

period, these organizations usually offer their ambulances for transporting the victims. It must be noted, however, that traffic around the impact area is often congested due to the convergence of volunteers, anxious citizens, organizational personnel, etc. Ambulances, therefore, cannot always be expected to arrive rapidly at the scene of the impact. Given the initial lack of knowledge of the scope of impact, "waiting" for an ambulance is often considered a luxury.

As has been noted in many disasters, however, victims are not left waiting for ambulances to arrive at the disaster site. Those in the impact area normally take it upon themselves to remove the victims using private cars, trucks, and even buses.⁶ As a result, there is normally little delay in getting the casualties of the disaster to the loci of medical aid.

Problems of medical wisdom and rational judgment are, however, involved in the process of voluntary transportation by private sources. Many people are not trained in the techniques of caring for injured persons. Actions brought forth by the sense of urgency -- such as mishandling an individual with internal injuries or driving at breakneck speed to reach a hospital -- may actually cause more harm than benefit. Furthermore, the individuals involved in the rescue activity may not be qualified to judge the seriousness of the injury to a person. In the haste to transport one individual to medical care, other more severely injured or still threatened individuals may be ignored. For example, in one fire, individuals were so involved with taking those persons already rescued to the hospital that a number of individuals still in the burning building were ignored.

In most American communities, the hospital is assumed to be the primary locale of medical treatment. While the normal range of illnesses can be handled by a visit to a physician, any injury or "out of the ordinary" medical problem is usually "handled" by the hospital. Such attitudes tend to carry over into disaster situations.

In numerous disasters, however, alternative treatment centers are often established near to the impact zone to function as first-aid stations and to screen out those patients with more serious injuries. Several studies of disaster operations have shown, however, that these first-aid stations are often by-passed because (1) judgments are made by those transporting the victims that they need "more" than first aid, and (2) these stations may be established after most of the injured have been removed. In one disaster only ten percent of the casualties had received first aid before being transported to the hospital.⁷ This situation means then that hospitals bear both the major and also the initial responsibility for handling the injured from a disaster event. The birth and death of a first-aid station is described in the following case study. This illustration is valuable also in that it indicates that many organizations become involved in one way or another in caring for casualties.

Soon after the tornado a number of aid stations were established in and near the impact area where victims were brought for temporary help and shelter. Most of these stations were spontaneously and informally

organized. This case describes the functioning of the aid station established at the Ternstedt auto parts plant located at the edge of the impact area.

Unlike other stations, Ternstedt represented a formal organization spontaneously created by other agencies to perform the following functions: (1) sort cases requiring first aid from those requiring hospital attention, (2) administer first aid, and (3) expedite rescue generally. In order to accomplish these tasks, two goals had to be achieved almost simultaneously: (1) a physical layout for a medical aid station, and (2) a supporting organization to recruit its personnel, supply the equipment, and coordinate with other outside organizations.

The central medical team was composed of a doctor, four registered nurses, one practical nurse, two first aid men, two women recruited to assist the team, and several residents from the local area to do any physical or other work required. Although many formal organizations made it possible for the station to operate, the most important supportive organizations in approximate order of importance were the state police, the National Guard, General Motors Corporation, the local hospitals, the county medical society, the Red Cross, and the Boy Scouts. The local police and the Civil Air Patrol were also involved.

Phases One and Two

About 10:30 p.m. officers at state police headquarters decided it would be necessary to establish an emergency medical aid center close to the impact area. They sent out appeals for medical personnel and supplies, and informed their officers and volunteers that all supplies should be sent to the Ternstedt auto plant. They also contacted most of the above-named organizations.

A doctor who lived in Flint was listening to radio reports of the tornado. He phoned the medical society and was advised to proceed to Beecher. After securing supplies from his office, he and his wife, a registered nurse, proceeded to the area and were escorted to the Ternstedt plant at about 11:30 p.m. The doctor informed the state police of his specific supply and personnel needs. With the help of volunteers, a 12-bed hospital was established. Within a half hour, by midnight, the station was ready to operate.

During the next two hours, all the materials and personnel necessary to operate arrived. Cots, bedding, and other supplies came from the National Guard; the medical society sent in tetanus serum and other drugs; hospitals and druggists sent what medical supplies they could spare; and nurses arrived from Detroit, Lapeer, Ann Arbor, and Flint. At the same time, an organizational procedure was established and official status was accorded the station.

A few people who had minor injuries began to arrive. To increase the station's use, Boy Scouts were sent into the area to inform people of the station's existence. Workers who needed first aid or rest began to arrive. Unable to account for the light volume of patients, the personnel concluded that at daylight, when victims could be found, the station would be busier. However, by 6:00 a.m. it became apparent that there would be no heavy use of the station facilities. Only 15 to 20 people (mostly workers in the area) had been treated.

Phase Three

The medical personnel left at 6:00 a.m. and most of the other personnel had left by 9:00 a.m.

The doctor and the nurses were generally disappointed with the performance of the aid station. Very few people had been treated during the six-hour period, and most of those were not victims. The medical personnel agreed that victims had been moved too hastily to overtaxed hospitals. They felt that patients should have been sorted first at the aid station, that the police should have selected cases to be sent to the stations, and finally, that more medically trained people should have been at the disaster site.

Correct as these evaluations may be, the main fact remains that the station was established too late. By midnight, when it first began to operate, most of the victims had already been removed to the hospitals and were being cared for there. Yet the station served other functions: providing first aid for workers in the area, serving as a place for them to relax, and providing canteen facilities for the rescue workers. These became the main functions of the station after the National Guard assumed formal responsibility the next morning.⁸

Hospitals, therefore, bear the brunt of the casualties. What specific hospitals are chosen in a community by those transporting the injured, however, is contingent upon a number of factors. First, the distance from the impact zone to the hospital may affect the choice. A hospital that is proximate to the impact zone may receive a disproportionate number of casualties. For example, after the tornado of March 3, 1966 in Jackson, Mississippi, while there were five major hospitals in the city, the hospital closest to the impact zone received the greatest number and the most severely injured casualties. This hospital was neither the largest in the city, nor had the most explicit disaster plans; it was simply close to the impact. The hospital farthest from the site, on the other hand, received not more than half a dozen patients.

Second, it has been noted, however, that the distance factor is not the only variable. The familiarity or saliency of the hospital for those transporting the injured is also crucial. In one disaster a single hospital received most of the casualties, and was severely undergoing stress. It was by no means the closest hospital or the most easily accessible from the field; others were much closer to the impact area, and the streets leading toward the other hospitals were much more clear. The hospital, however, occupied a prominent place in popular awareness in the area. It was the town's only public, municipal hospital. It was the most modern and largest also. People were generally proud of the hospital as a community facility and it was the salient hospital not only to ambulance drivers and police, but also to the general public. Consequently, despite the congestion and delay, the other hospitals were virtually ignored and the overwhelming bulk of the casualties were brought to it.⁹

Third, certain hospitals may not be chosen because they are not viewed as being able to perform the functions related to the mass care of casualties. Mental hospitals, health clinics, children's hospitals, and others may not be selected. In the Alaskan earthquake, for example, in the city of Anchorage, while there were five hospitals in the area, most of the injured were brought to one of the two private hospitals. The three public hospitals were not regarded as places to take the injured for various reasons. One was a psychiatric hospital, another was generally defined as serving mainly the native population, and the third was outside the community and was located on an Army base.

It is not within the framework of our discussion to deal with the intra-organizational problems facing the hospital which receives the bulk of the injured. Let us, however, briefly mention only four problems that have community-wide relevance. First, because of the lack of screening of the injured at the disaster site, the hospital is often faced with a problem of congestion in traffic around the hospital. Many injured are being brought into the hospital, but this number is augmented by incoming hospital personnel, volunteers, and persons concerned with the welfare of others. Second, related to the problem of congestion, is that of control. Efforts to control the convergence on the hospital and to limit admission to the hospital often involve the social control agencies of the community. Third, the hospital is often faced with a problem of communication. Accurate information from the

impact area about the extent of the disaster and the number of injured is crucial if the hospital is to be able to anticipate its increased demands. Often this information cannot be gathered. Furthermore, communication with other organizations is important. If the hospital is isolated from the remainder of the community, it faces problems in receiving needed information and assistance. Finally, the hospital may have problems regarding the availability and supply of resources, both in terms of equipment and personnel. Again, interorganizational ties can alleviate this problem.

The Dead

Although handling the dead in a disaster is obviously not a pleasant task, it is a task the community must perform. Let us briefly discuss some aspects of this problem.

To begin with, while some organizations in the community may handle the dead as a part of their day-to-day functioning -- for example, hospitals, coroner's offices, mortuaries, and others -- none is equipped or ready to handle mass fatalities. Obviously the dead must be removed from the impact area. Where, however, should they be taken? Hospitals are for the living, not the dead. While some may be taken to hospitals with morgue facilities, many are taken directly to funeral parlors. The number of bodies the funeral parlors can handle is, of course, limited. Often, therefore, temporary morgues are established. These morgues may be established in schools, auditoriums, warehouses, etc. In Indianapolis, after the coliseum explosion during an ice show, the coliseum itself was utilized as a morgue. Usually, the local police department, medical authorities, relief agencies, and the coroner are involved in establishing the morgue.

Because of the lack of coordination and overall authority often evidenced in interring the dead, one sometimes finds a duplication of some efforts on the part of community organizations. The keeping of casualty and death lists is an excellent example. In many disasters, it is found that many different organizations, such as the Red Cross, Salvation Army, police, coroner's office, etc., keep their own "official" casualty lists. The time and energy lost from this duplication of effort is obvious.

Finally, any discussion of handling the dead in the post-impact period must consider the values of American society concerning the dead. Americans not only value open-casket funerals; more basically, they require that each body be named, buried separately, and some form of "ceremony" precede the burial. It would appear that Americans are basically opposed to "mass burial." In a disaster with extremely high fatalities, these values on burying "known" individuals in a prescribed manner may create problems for the community, not only in simply identifying the dead, but also in developing some method of individual burial.

A Case Study -- The Injured and the Dead

Much of what we have been discussing about caring for casualties is illustrated in the following case study from the Worcester tornado.

When the 1953 tornado struck Worcester County, fifteen hundred persons were injured, four hundred ninety of them requiring hospitalization. Seventeen hospitals and their medical personnel were foremost in caring for these casualties. The Civil Defense, Red Cross, National Guard, and Worcester Society for District Nursing were other organizations involved in the medical activities.

After the tornado impact, casualties were immediately taken to the different hospitals. Less than ten percent of those casualties received first aid before being transported to the hospital. Some physicians, however, did set up first-aid stations but they mostly handled only minor injuries. The dead were also taken to hospitals, particularly one with sizeable morgue facilities. Other dead persons were taken directly to funeral parlors. Most of the deaths were due to head injuries.

Upon arrival at the hospitals, those patients requiring treatment for shock were given such treatment immediately. X-rays were taken of all suspected fractures. Most of the minor injuries were lacerations, contusions, and abrasions. The upward drift of tornado winds had driven foreign matter into wounds with great force and caused contamination. The injuries were cleansed and sutured. Tetanus antitoxin was given and most of the patients received penicillin.

Most of the major injuries were fractures. Neurosurgery was the major operation performed. The neurosurgical operations were performed mainly by two neurosurgeons in two hospitals. The second major surgical procedure was reduction of major compound fractures of long bones. Orthopedic surgeons performed these operations. There was some partial traumatic amputation. A few persons received medical help for emotional instability.

While the hospitals performed necessary medical services, other organizations provided supplies. The Framingham Civil Defense headquarters issued first-aid supplies and the Civil Defense director provided for medical coverage for one day after the tornado struck. The Red Cross provided mass care for approximately 10,000. Blood was brought to Worcester by Red Cross automobile from Northampton Red Cross Regional Blood Center. The Red Cross also attempted to compile lists of hospitalized casualties. The National Guard also functioned. A medical company was activated and it set

up three battalion aid stations to treat National Guard personnel. Some civilians, however, received treatment for minor injuries there. Twenty nurses from the Worcester Society for District Nursing provided their services. And finally the Commissioner of Public Health established a pool of unassigned physicians and sent them to different areas when requests came in. These organizations functioned to care for the fifteen hundred casualties of the Worcester tornado.¹⁰

Conclusion

In this chapter we have been dealing with those activities centering around the preservation of life. In discussing search and rescue activity it was noted that most of the actual rescue work is done by the victims of the disaster themselves and other individuals in the impact zone. Typically, persons first seek to aid those known to them, such as family members. After having ascertained the safety of specific others, rescue workers turn to others in general. Finally only later do they turn to care for themselves. It was also noted that organizations become involved later in rescue activity, and they are successful to the degree in which they are able to adjust their activities to the ongoing rescue activity of the individuals. Problems of coordination and communication were also mentioned. Regarding the care of casualties, both the care of the injured and the dead were discussed. The analysis centered around the problems of convergence upon hospitals, communication among hospitals, the failure of first-aid stations to be utilized, the selection of hospitals to receive the casualties, and various factors related to handling the dead.

In the next chapter, we will consider community tasks involved in the later stages of the post-impact period.

FOOTNOTES: Chapter IV

1. Allen H. Barton, Social Organization Under Stress: A Sociological Review of Disaster Studies (Washington: National Academy of Sciences-National Research Council, 1963), p. 20.
2. For our purposes we will not consider the condition of "total destruction," otherwise the monograph could end here.
3. William H. Form and Sigmund Nosow, Community in Disaster (New York: Harper and Brothers, 1958), p. 112.
4. Ibid., pp. 35-40.
5. Ibid., p. 112.
6. In one disaster, a hospital was faced with a problem of no small degree when at one time 30 casualties arrived at the emergency room in a bus. The difficulties in processing so large a number of patients in a short time is understandable.
7. See Henry J. Bakst et al., The Worcester County Tornado -- A Medical Study of the Disaster (Washington: National Academy of Sciences-National Research Council, 1955).
8. Adapted from Form and Nosow, op. cit., pp. 47-53.
9. Irving Rosow, Authority in Natural Disaster (Manuscript), chap. vi. Perhaps even more enlightening, ambulance drivers who came from a town 30 miles away took their injured back to hospitals in that town which were salient to them, instead of proceeding to the local hospitals which were much nearer.
10. Adapted from Henry J. Bakst et al., op. cit.

CHAPTER V

LATER POST-IMPACT EMERGENCY TASKS

Introduction

While activities centering around the preservation of life are given the highest priority by the community in the post-impact period, in the present chapter we will consider those activities which are related to the more long-run adaptation of the community to the disaster agent. Specifically, we will consider (1) protecting against continuing threat, (2) restoring minimum community services, and (3) caring for survivors. These tasks are essential if the community is to again reach a state of relative equilibrium, somewhat analogous to the condition of the system prior to the impact.

In this chapter, we will first discuss each of these tasks in general terms. This discussion will be followed by a more specific analysis of what tasks must be performed, and what organizations in the community social system usually become involved in their performance.

Let us first turn to those activities centering around the tasks of protecting against continuing threat.

Protecting Against Continuing Threat

The initial impact may be only the beginning of a set of tasks for a community. The initial impact may create conditions which make remedial activity for the community difficult. The community must protect itself against continuing threat. For example, power lines may be broken and fall across streets and sidewalks endangering the lives of those in the area who survived the initial impact. Also common is the creation of secondary effects which may, in the long run, be more destructive than the original disaster agent. For example, earthquakes create tsunami waves. Hurricanes often foster floods.¹

Most disasters involve some degree of continuing threat. Certain disasters, however, because of the characteristics of the agent, the physical setting, the timing of the impact, etc., may produce greater devastation from secondary threat than others. The earthquake that struck Niigata, Japan on June 16, 1964 offers an excellent example of the occurrence of secondary threat and the resulting devastation.

Within the city, the earthquake totally or partly destroyed 8,637 houses, damaged 9,633 others, disrupted all the public utilities, severely interrupted all means of communication and put out of commission almost all the land, sea and air transport facilities. For instance, the port area was so damaged and the entrance from the sea was so cluttered with debris,

that almost all movement into the harbor was initially blocked. Everyone of the eighteen lines of the National Railroad system entering the city was broken in at least two places. Crevasses and over one hundred and fifty landslides caused a similar blockage of movement on all the major highways and secondary roads in the prefecture. The damage to the airport prevented the flight of anything but helicopters and very small planes.

Besides damage from the initial impact of the earthquake, there were other secondary effects. Much of Niigata is built on delta plain land and former river beds. Over fifty percent of the land area of the city was flooded to a depth of three to five feet. The initial inundation resulted from the weakening of the embankments of the city's two major rivers. A subsequent flood came from the tsunami waves generated by the earthquake which began arriving thirty-three minutes after the initial shock and continued periodically for six hours. A later survey indicated that 11,101 buildings were inundated.

Additional destruction was caused by nineteen small and five major fires that erupted immediately after the earthquake. Particularly serious was the huge conflagration in one of the major oil refineries located near the port area on the outskirts of the city. The fire, which was still burning twelve days after the initial impact, first destroyed 90 storage tanks and eventually engulfed 302 residences and 197 other nearby buildings. For a time there was a threat that poisonous fumes would be released because the flames approached a large tank of gasoline additives and tanks containing hydrogen gas. Over 6,500 residents in this neighborhood had to evacuate their homes.

The earthquake occurred immediately after the lunch hour, so few people were cooking. Therefore, compared to the Tokyo earthquake of 1923 which struck at noon, Niigata was in less danger from extensive fire damage. In addition, people had time to extinguish their stoves, because the earthquake took about three minutes to reach its full destructive force. Apparently, many residents followed the Japanese disaster prevention instructions which strongly advise that the gas should be turned off in the event of any sudden emergency.

Records indicated that a total of 152,401 persons in Niigata city alone were directly affected by either the initial impact of the earthquake or secondary threats

of the floods and fires. Although the destruction was extensive, only 11 persons were killed and but 120 injured in the city of Niigata itself. For several days after the earthquake, there was concern over the possibility of a widespread dysentery epidemic -- another secondary threat. There were only thirteen cases identified, however, with the last case being reported on June 25, nine days after the initial impact of the earthquake.

It is obvious that the community must prevent and/or ameliorate these secondary or continuing threats. We must, however, pose a number of questions in order to understand more fully the social implications of these tasks. For example, what types of secondary threat can be distinguished? What social processes and patterns are involved in these activities? What problems are inherent in the situation?

Types of Secondary Threats

Three types of secondary threats will be discussed. First, we will consider secondary impacts by disaster agents which are causally related to the initial impact agent. Second, we will discuss secondary impacts which stem from the consequences of the initial impact. Third, "false" secondary threats will be discussed. These are important since communities may ready resources and spend valuable time preparing for a threat which may not actually exist. In each of these types we will focus on specific tasks and the particular community organizations that perform them.

Secondary Impact by Other Disaster Agents

As was previously mentioned, certain disaster agents foster other agents. Earthquakes create fires and tsunami waves. Hurricanes may create floods. The community must take measures to protect itself from these secondary impacts.

The secondary impact of a disaster agent may be "anticipated" by the community; that is, the community may expect that a certain type of initial disaster agent will be followed by a secondary impact by a different type of agent. This anticipation may be caused by past experiences with similar types of agents, adequate warning on the part of those agencies who normally perform such functions, general knowledge concerning disasters, etc. As an example of an "anticipated" secondary impact, following the Alaskan earthquake, many communities both within the initial impact zone of the earthquake and located as far away as California and Hawaii anticipated the occurrence of tsunami waves. The communities mobilized their resources, undertook pre-impact activities, and evacuated threatened areas. The community organizations normally responsible for interpreting environmental cues and warning the community performed these traditional tasks. When the waves struck these areas, therefore, at least a minimum of warning and pre-impact activity had been undertaken. One key idea inherent in the above notion, therefore, is that "anticipation" may lead to a mobilization of community resources and the

utilization of time in pre-impact activities aimed at limiting the destructive force of the secondary agent. Furthermore, these actions preparatory to the second impact may facilitate the community's response to that impact. When channels of interorganizational communication, coordinating centers, control procedures, etc., have been instituted, the efficacy of the community's response to the secondary agent may be greatly facilitated.

It is also possible, of course, that the "anticipated" secondary impact will not occur. Some of the communities that expected to be struck by tsunami waves following the Alaskan earthquake simply were not inundated -- no waves appeared. In another instance, certain areas were struck by tsunamis after the initial impact of the earthquake. Following this secondary impact, there were "aftershocks." These areas again anticipated being hit by tsunami waves. Evacuation of the low lands and resource mobilization ensued. The second tsunami, in this case the fourth impact, never materialized. The community had, therefore, prepared for a threat which never came. The utilization of human and material resources and the time spent in preparing for this impact might have been more profitably applied to other post-impact activities, such as search and rescue, caring for casualties and survivors, and restoring minimal community services.

It is possible for an "unanticipated" second disaster agent to strike the community. New Orleans was faced with a "dual disaster" when Hurricane Betsy was followed shortly by a flood. While organizations expected and prepared for the hurricane, they neither anticipated nor were warned of the flood. These organizations were confronted with a situation which required reassessment in allocating existing and emergency resources. Preparation was not possible due to the "unanticipated" nature of the second impact. Furthermore, as the following examples illustrate, the community organizations were also faced with grave problems concerning response to the agent.

Red Cross normally is prepared for maintaining short-term shelters [24-hour shelters] for hurricane victims; however the flood forced them to extend shelter care in some areas of the city up to two weeks. This created severe problems in supplying food, clothing, medical care and personnel for "authorized" shelters. To take care of the increased numbers of flood evacuees, many "unauthorized" shelters were opened which relied heavily upon Red Cross for emergency supplies. This further placed strain upon the resources and capabilities of Red Cross.

Providing food canteens for emergency volunteer workers and evacuees had generally been the emergency task that the Salvation Army has performed in the past. Preparing and expecting to carry out this function, the Salvation Army was suddenly faced with the demand of having to supply food and clothing to flood victims located in Red Cross shelters.

Although the public utilities are quite capable of handling daily emergencies, when a disaster as extensive as the hurricane-flood strikes demands suddenly exceed capabilities. While the utilities companies expected to become involved in repairing downed lines immediately after the hurricane, the flood complicated and delayed restoration by damaging many of the underground gas and power lines and preventing repair crews from moving about the city.

Before considering the effects of either the initial or secondary impact which are themselves defined by the community as threats, such as fallen "hot lines" and broken gas lines, a final word must be said about the sequence of tasks involved in preparing for a secondary impact by a disaster agent and the organizations which perform them. Actually, neither the tasks nor the organizations undertaking them are new or novel. Particularly in those cases where there is anticipation of the secondary event, these tasks are basically the same as those that preceded the initial impact -- warning and pre-impact activities.

Warning is the first activity in preparing for continuing threat. There is a continuing search for environmental cues that may signify another impending disaster after the initial impact. The "environmentally attuned" community organizations, the weather bureau, river and port authorities, health departments, etc., carry on these tasks and issue warnings to the community through the various available channels. In many disasters, the same organizations that issued the warning message concerning the initial impact also are involved in warning of secondary impacts. The United States Coast and Geodetic Survey may initially warn the local community of the possibility of tsunamis following an earthquake, this warning then being disseminated through the local warning system. The local river authorities may warn of a flood following an earthquake. These organizations may, of course, be aided by other organizations in the community who normally do not function as a part of the warning system, but who do perceive cues of possible danger, and issue a warning message to the community. For example, a gas or petroleum company in the community may notice breaks in its lines following a disaster and warn the community of fires or gas explosions. A shipping company through radio contact with its ships at sea may learn of the approach of a tsunami and pass this information on to the community. Warning may also come from individual community members who have developed a heightened awareness to perceive environmental cues following the first impact. Furthermore, the previous disaster experience of these individuals may determine if they correctly interpret the cues. For example, after the Alaskan earthquake, for some areas in Alaska, the official warning issued from the United States Coast and Geodetic Survey arrived after the tsunami waves had struck. Warning in many of these areas, Chenega, Seward, Kaguyak, Old Harbor, Ouzinkie, and others, mainly came from individuals who cautioned other community members about the possibility of tidal waves following the earthquake, or who correctly interpreted the "strange" action of the water offshore as indicating the likelihood of tidal waves. It must be noted, however, that often community members may be deeply involved in such post-impact activity as search and rescue and

therefore pay little heed to the environment, particularly in the sense of looking for cues of approaching secondary threats. The major responsibility for warning the community, therefore, falls to the local organizations.

Warning may, of course, come too late. The devastation to a community that is engaged in post-impact activities from a secondary impact may be particularly great. As was mentioned, some areas in Alaska were not warned of the approaching tsunamis following the 1964 earthquake. This lack of warning may be directly attributable to the nature of a tsunami. Once the existence of a tsunami is confirmed and the time and place of its origin known, it is possible to predict with accuracy the time of its arrival at all points on the coasts liable to be reached by the wave. However, the speed of travel of tsunamis is so great that there is usually insufficient time to warn localities within 1,000 kilometers or so of the point of origin.² In the Alaskan cities of Valdez, Whittier, and others, no warning of the secondary impact was given and the destruction was fairly severe.

If, however, the warning is issued, correctly interpreted by the community organizations and members, and precedes the secondary impact by sufficient time, pre-impact activity may be possible. While types of pre-impact activity discussed may all again be undertaken by organizations and individuals, the tasks may be either aided or abetted by the previous allocation of resources made in response to the initial impact. If the tasks relating to preparation for and response to the secondary impact involve organizations in simply continuing disaster activity they have already begun, the accomplishment of pre-impact activities will be facilitated. If, however, preparing for the second impact requires a vast reallocation of both human and material resources, for example rescue activity may have to be temporarily abandoned, preparing for impact may prove to be a very difficult task.

Other problems in preparing for a secondary impact will be discussed later for they are problems that relate to any type of continuing threat. Let us now turn to the second major type of secondary threat.

Secondary Threats from Damage to the Community

Many alterations in the physical environment resulting from a disaster impact may be threatening to the welfare of the community in a general sense. More specifically, these threats may render the successful completion of post-impact activities aimed at restoring the community to a state of "normalcy" very difficult. These effects may be "anticipated" or "unanticipated" by the community. Where they are "anticipated," ameliorative action may be aided by a rational allocation of community resources. As with "unanticipated" secondary impacts by disaster agents, a threat which is unexpected may prove to be particularly disrupting to the community which has its resources being utilized in the performance of other tasks.

What are some of these continuing threats? Obviously there are many possible effects of a disaster which may be threatening to individuals in the community, to the communication and transportation system of the area, and to various other subsystems, such as the economy, of the community. For example,

earthquakes are particularly prone to produce secondary threats; oil storage tanks often are damaged and destroyed creating fire risks. Additional hazardous conditions may be created by structural damage to buildings. Certain structures may be damaged and dangerous but not totally destroyed. Landslides may continue over a period of time, encouraged by aftershocks, and create additional damage. Communities may have to take action in the form of an assessment of hazards by specialists and consequently condemn certain buildings and areas as being too dangerous for continued habitation.

Many disaster agents disrupt water lines, sewage facilities, and utilities. The disruption of water lines then raises the possibilities of contamination and subsequent risks of illness that may reach epidemic proportions. The disruption of sewage creates the problem of seeking alternative methods of disposal. Likewise, the disruption of utility lines necessitates finding alternative ways of storing and preparing food.

These circumstances have effects at the individual, organizational, and societal levels of the community. Individual well-being and safety are obviously threatened if power lines lie across streets, buildings are unsafe to enter, water is contaminated, etc. One must also consider, however, the larger community context. Transportation and communication facilities of the community may be rendered inoperative and therefore prove to be a threat to the community's response. Without these vital facilities, organizations in the community are greatly limited in their ability to gather information, provide resources for needed post-impact tasks, and coordinate their actions. As will be mentioned shortly, these facilities must be restored rapidly. Finally, these effects to personal welfare and community functioning may also have consequences for specific areas of the community. The economic system, for example, of the community may be threatened and disrupted by these continuing conditions.

All of these areas of concern involve the activities of community organizations, either in terms of direct action or involvement in informational activities to suggest alternative forms of action to reduce the threat. Local public utilities companies, health and safety departments, public works departments, etc., are often involved in removing these threats. As a part of their normal day-to-day activity, these organizations perform similar tasks. While the disaster situation may increase the quantity of the demands upon these organizations, the type of tasks they perform remains basically the same. In addition to these formal organizations, various other community organizations become involved. Construction companies may loan their equipment to remove debris. Personnel from various organizations such as the Boy Scouts, local fraternal organizations, and others, may serve as runners and gather information about other sources of continuing threat.

The Alaskan earthquake provides an excellent illustration of how local organizations become involved in removing certain of these continuing threats.

In addition to the immediate response in terms of search and rescue and emergency medical care, activity was directed toward neutralizing environmental health

threats created by the earthquake. It was known that fresh water supplies were potentially contaminated. The city of Anchorage does not have a health department. Public health needs are met by contract with the Alaska Department of Health and Welfare.

At the time of the quake the local public health officer was ill and unable to assume responsibility for emergency activity. To compound the problem, the director of the Arctic Health Research Center, who was designated in the emergency health plan as his alternate, was also incapacitated. This left no one in charge of public health services in the Greater Anchorage Health District at the time of impact.

At first, most of the public health nurses and sanitarians remained at home. One of the local sanitarians, however, came to the Public Safety Building at 8:00 p.m. He thought he was the only sanitarian available. He was asked to organize a program to supply safe drinking water to the city. He had no staff and little information about sources of equipment and pure water.

About 9:30 p.m. this sanitarian had the first of a series of public health messages released over the radio, warning area residents that all water must be regarded as contaminated and unsafe for human consumption until it was boiled or chlorinated. He issued simple instructions for the chlorination of water with household Clorox.

A separate announcement called for public health sanitarians to report to the Public Safety Building. Three of his regular staff reported eventually and with liaison assistance provided by the military, water trailers were procured from nearby Fort Richardson. The first of these arrived at the Public Safety Building by 11:00 p.m. Friday evening. These were dispatched to various key points throughout the city, with shelters and hospitals being given priority.

Before midnight on Friday, the health officer of the south-central region of Alaska stopped in at the Public Safety Building and conferred with the sanitarian. It was agreed that the sanitarian would continue there with the water program and that the health officer would report to state civil defense headquarters.

The sanitarian in charge of the water program had difficulty convincing military authorities of the need for so many water trailers. It was a confused and hectic night. However, he was able to report by 4:00 p.m. on Saturday that safe water was available at no less than 29 schools and other central places throughout the city and outlying areas. These water trailers were staffed and maintained by military personnel until city water was restored and declared safe. A week after the earthquake the number had been reduced to nine trailers, mostly in the Turnagain and downtown areas. In addition to the water trailers the military also supplied four water treatment plants capable of purifying water on the spot. These were put in use on Monday, March 30, and phased out on Thursday, April 2.

With sufficient pure water available by Saturday afternoon, attention was directed to testing public wells and city water mains as the latter were restored. The earthquake had destroyed the health service laboratory normally used for this purpose. Military laboratories did some of the testing but the bulk of it was done by Arctic Alaska Testing, a local firm. Since the extent of underground breakage of both sewers and water mains was unknown, each section of main had to be systematically tested before the water could be declared safe for drinking. By April 8, a week and a half after impact, only a few outlying subdivisions remained to be tested. Water transmitted through overland irrigation pipes was declared unsafe and had to be boiled or chlorinated.

Meanwhile, public health clinics were set up at a number of points in the city, using local, state, and federal public health nurses and doctors, as well as volunteers. This week-long program was initiated on Saturday morning on a small scale and expanded during the next several days. In all, 38,000 typhoid inoculations were administered in the Anchorage area.

Beginning the first week after the quake, one sanitarian was assigned solely to the food warehouses for about a month to inspect food supplies until they had all been cleaned out.

The main feature of the public health effort was the initial inchoate and somewhat individualized response of its professional personnel. Most of the early effort (on Friday and Saturday) was carried out by individuals or small groups somewhat disconnected from one another. Overall direction and coordination did

not emerge until Sunday when the acting director of the Arctic Health Research Center was informed that he should have charge of the Anchorage Emergency Health Service. After reporting to the Public Safety Building and being briefed by the regional health director, he assumed command of the situation. Since he was unfamiliar with public health work he permitted the sanitarians and public health nurses under him wide latitude in structuring and carrying through their own program. Routine health work was resumed by most of the Anchorage district health personnel by April 5.

Obviously, many different organizations were involved in protecting the city of Anchorage from other continuing threats in addition to the water-typhoid problem discussed above. The above example, however, illustrates two key points. First, the successful completion of ameliorative action concerning continuing threats is dependent upon organizational involvement. In the above case study, not only did the public health organization take part -- an organization normally "expected" to handle these problems -- but the mass media, the military, local schools, and a local testing agency also performed needed tasks in the removal of the threat. These organizations had resources, either material, such as needed equipment or space, or personnel that could be applied to these problems. Second, one is also able to view the previous steps of warning and pre-impact activity again evidenced in at least a marginal manner. The public health official warned the community via the mass media of the possibility of the contamination of the city's water supply. Furthermore, instructions regarding preventive action were also issued, and apparently followed. The massive program of typhoid inoculation can also be considered as a part of these basic pre-impact steps that are again evidenced in the post-impact period.

False Threats

As was previously mentioned, a key idea inherent in the concept of "anticipation" is that when a community anticipates the occurrence of a continuing threat it is able to mobilize, allocate, and reallocate its resources to attack the problem. Obviously, this may be very beneficial to the community. It does entail, however, the neglect or postponement of certain other tasks in the post-impact period, tasks to which these resources could have been applied. When the threat does not occur, therefore, there may have been a waste of valuable resources and time on the part of the community. Some of these threats may not have occurred simply because of fortuitous factors in the physical environment. For example, the community may anticipate a typhoid epidemic. Community medical and other organizational facilities may be allocated to establish inoculation centers. Such a program involved a vast amount of resources and the utilization of valuable time. The water system in the community, however, may not have been contaminated. The threat of typhoid may not exist. The community's action, in an ex post facto analysis, may appear therefore to be non-rational.

Many of these "false" threats, however, result merely from misconceptions on the part of the community concerning the post-impact situation. These phenomena can be called "disaster stereotypes." They may be exemplified by a community's concern with such problems as "looting" and "panic."

Looting and panic will be discussed in greater detail in Chapter VI under the general topic of maintaining community order. Let us note here, however, that a "myth" has arisen concerning these forms of behavior. It is often expected on the part of the community that the post-impact period will be highlighted by large-scale disorganization and disorder, of which looting and panic are a part. It is thought that groups and persons will engage in many irrational acts, make illogical decisions, and in general act in an anti-social manner. There may be a number of reasons why these stereotypes are held. One may be partly historical. For example, there were many reports that panic and looting had occurred during the San Francisco earthquake of 1906. Such unauthenticated reports become a part of historical "evidence."³ Another explanation for the persistence of stereotypes is in the dramatic picture of post-impact behavior presented in movie and television versions of fictional disaster.

Whatever the cause, however, the anticipation of such behavior is widespread. Communities may, furthermore, define these actions as constituting a continuing threat. Resources, mainly under the guise of social control agencies such as the police and military, may be allocated to prevent this behavior. Actually, panic and looting are inconsequential problems.⁴ People seldom flee wildly. Looting in a natural disaster setting is extremely uncommon. Other problems which pose a greater threat face the community. Organizations must not direct their attention to non-existent or exaggerated problems at the price of ignoring the actual threats in the situation.

Problems Inherent in Protecting the Community Against Continuing Threats

In protecting against any of the types of continuing threat described above, there are certain factors inherent in the post-impact period that mitigate against these activities. Of course, certain factors may also aid the accomplishment of these tasks. The community may be more alert to warning messages and ready to take appropriate activity to lessen the threat. As was mentioned, the post-impact period is highlighted by the presence of normatively based "altruistic behavior." The individuals in the area are likely to cooperate and freely give aid to others. The following list of problems, however, must also be considered in any discussion of protecting against continuing threat. These factors will be only briefly discussed, and the list should not be considered as complete.

1. Lack of information concerning the effects of the initial impact and the possibility of continuing threat.

Any type of post-impact activity is often hindered by a lack of information about the actual, current conditions in the post-impact period. If

organizations are to respond effectively to these conditions, adequate information upon which to base decisions must be available. A "total picture" of the post-impact period is often unattainable. Decisions, however, must be made. A sense of urgency often prevails. A "hit or miss" strategy often develops, therefore, in the allocation of resources. This lack of information can obviously be detrimental to the tasks under discussion. For example, many "non-existent" threats might not become "anticipated" if adequate information were available. In the typhoid inoculation example, if the community had known that there was no threat from typhoid, there would have been no need for the inoculation program. Resources could have been more rationally allocated to ameliorate "real" threats. In the absence of this information, however, it was deemed necessary to take these preventive measures. Furthermore, a community that has adequate, factual information concerning the likelihood of a second impact by a disaster agent can take more rational action than one that simply "expects" a flood to follow a hurricane.

2. Lack of interorganizational communication.

In the immediate post-impact period, there is often a lack of communication among the organizations involved in handling tasks related to protecting against continuing threat and other post-impact activities. Obviously, this problem of communication is related to the previous condition of a lack of adequate information. In the earliest phases of the post-impact period, however, individuals and organizations may be initially "isolated" from each other. Normal communication facilities may have been damaged or destroyed by the initial impact. The mass media may be off the air. Telephone lines may be down. The exchange of information concerning the results of the initial impact, requests for aid and resources, statements on organizational capability, the likelihood of a second impact, general instructions to the populace about preventive measures to guard against continuing threat, etc., between individuals and organizations, therefore, may be greatly limited. Alternative methods of communication may have to be developed if the community is to detect effectively, warn about, and ameliorate secondary threats.

3. Lack of overall coordination.

While the first two points are obviously involved in any discussion of coordination, it must be noted that effective action aimed at preventing continuing threat may be hindered by a lack of overall coordination on the part of the participating local organizations. Not only must information be gathered and exchanged, but resources must be allocated -- and often reallocated -- to contend with these threats caused by the initial impact. Where some form of overall coordination of the activity is established, the chance for an effective completion of these tasks is maximized.

4. Higher priority may be placed on other post-impact activities.

The accomplishment of tasks related to protecting the community from continuing threat involves the utilization of a vast amount of human and material resources. Other tasks, however, such as search and rescue and caring for casualties, may receive higher priority on the part of the community.

Resources will be more rapidly and willingly assigned to their accomplishment. It was noted previously that those tasks relating to the preservation of life are given the highest priority in the post-impact period. As tasks become less directly involved in preserving individual life and well-being, they receive lower priority. Those conditions resulting from the initial impact, therefore, that pose a direct threat to individual safety -- for example, "hot lines" lying on the street -- may be expected to receive higher priority than those less directly threatening to the individual. Be that as it may, in any attempt to protect the community from continuing threat, those involved must be aware that other activities may be receiving both higher priority and a larger slice of the "resource pie."

5. Reallocation of resources.

Closely related to the above discussion of priorities is the fact that the accomplishment of tasks relating to secondary threats often involves a re-allocation of resources. Other tasks may already be in various stages of completion. Search and rescue activity, the care of survivors, the collection of information, etc., may be well under way. To accomplish these tasks relating to secondary threat, resources, both human and material, may have to be reassigned from these and other post-impact activities. When the continuing threat is "unanticipated" and "catches the community by surprise," this re-allocation may be very troublesome. The previously cited case of New Orleans during Hurricane Betsy is an excellent example of problems relating to the reallocation of resources.

6. Shortage of resources due to human and material loss from the initial impact.

With disaster impact, both human and material resources may be destroyed. The accomplishment of any post-impact activity is obviously contingent upon the degree of "resource loss." Where there is little loss of life and material resources, the likelihood of accomplishment of secondary threat activities will be heightened. Where there is a shortage of resources, other tasks may take precedence.

Restoration of Minimum Community Services

The community struggles to "rebound" from the disaster. Often the degree and rapidity of recovery is extraordinary. The recoveries of Hiroshima, Halifax, San Francisco, and Hamburg have been widely hailed as remarkable. In the case of Hamburg, the long statistical series available suggests that the wartime incidents represent only a temporary break in the city's overall pattern of development.⁵

In order to attain a high degree of recovery, however, in the initial stages of the post-impact period the community must first restore those services necessary for its functioning. It was suggested that subsequent in priority given to the victims during the emergency period would be the

activities related to the restoration of what can be called "essential" services. If impact disrupts utilities, transportation and communication arteries and facilities, restoration of these is given high priority.

Many of the remedial activities in a community after a disaster impact utilize these "normal" community services. Casualty care, for example, depends upon the continuation of electric, water, and gas supplies for hospital operations. Roads need to be cleared sufficiently in order that the injured can be brought to the hospital and so that employees can get to work. Many of these services, normally provided by the community and required for continued and efficient operations, become disrupted with impact. A significant portion of community activity during the post-impact emergency period attempts to restore these services to some minimal but operating level. In most instances, there are existing community organizations which have such activities as the restoration of public utilities as definite responsibilities. Thus there is a degree of continuity in organizational activities since the pre-disaster experience of these organizations applies to their disaster-created tasks. For example, prior to impact the telephone company is responsible for installation, repair, and operation, and after impact it tends to concentrate on repair of its facilities. Certain phones may be put in operation quickly while other phones, perhaps in residential areas, may be delayed for months. Additional personnel may be brought in to assist in the tasks with high priority.

Normally, when one considers the restoration of services, the concepts of "repair" and "replacement" immediately come to mind. Streets, power generators, pumping stations, gas lines, communication facilities, etc., may be repaired or, in some cases, a damaged component may be replaced by a new one. There are, however, other means available to restore these services. In Ikle's study of bomb destruction, he utilized not only the basic economic paradigm of "consumer-resource ratio," but also the concept of "elasticity." While disasters destroy resources, they also tend to reduce the demand for certain types of resources because of mortalities, impoverishment, and the lower priority given to economic activity. The demands for a few critical services, however, may not contract; often they expand. The capability of offering these services, on the other hand, decreases. Medical services and utilities are examples of these critical services.⁶

In addition to "repair" and "replacement," therefore, service may be restored by means of "elasticity." This concept refers to the expandability of services performed by the surviving resources. For example, transportation facilities may be "expanded" by crowding -- as may housing. Medical facilities can be spread by placing a priority on certain types of cases and dropping other care to a Spartan level.

Hirshliefer offers a fourth means. He states that "substitutability" may be an effective method for restoring services. Certain resources may be substituted for others in restoring these services. For example, at least in good weather, certain temporary structures or tents may be satisfactory minimal substitutes for housing. Trucks may be used for buses and trains as a temporary measure. Runners may substitute for telephone services, and so forth.⁷

Community organizations utilize all four of the above methods in restoring essential community services to at least a minimal level. Of course, not all of these methods are applicable to every type of problem. For example, certain services rely upon complex systems. Electric power generators are only one element in the electrical distribution system. If this system is destroyed, obviously it may not be possible to furnish electricity -- a service vital to almost all community post-impact activity. "Repair" and "replacement" are, therefore, the appropriate means to restoring these services. "Substitutability" is of little practical value when one considers the functioning of the entire community system in the emergency period. The appropriate means must be chosen. The choice is aided by the fact that most of the organizations involved in restoring these facilities are performing traditional tasks for which they have experience.

As was mentioned previously, after the preservation of life, the restoration of essential services receives the highest priority in the post-disaster period. The order in which the services are restored, however, also is related to the great value placed on preserving life. For example, immediate attention will be given to restoring services to hospitals. Command centers and installations of organizations which are most actively crucial for the emergency activity also receive high priority. What should be evident is that services are not restored in a random or "chance" manner, but decisions are made as to priority of restoration.

It should be evident, therefore, that the activities of the various community organizations involved in restoring these services must be coordinated. The diversity of activity required after a disaster event necessitates some exchange of information among those charged with responsibility in various segments of community life. Normal lines and procedures of coordination which exist prior to the emergency often do not easily sustain the overload created by impact. It is characteristic in many widespread disasters for a meeting to occur which brings together representatives from many segments of community activity to "report" both on the damage as well as the activity and resources required to restore some semblance of working order.

For example, in Anchorage such a meeting took place at 3:00 a.m. on the morning following the 5:30 p.m. impact of the earthquake. The meeting was attended by over a hundred persons in a crowded basement gymnasium of the safety building. The mayor took charge of the meeting and appointed the city civil defense as the main coordinating agency. The acting CD director asked for the various reports. As the reports were given, a general sharing of information followed each one. Most of the participants there were concerned with "essential" services. Suggestions were given for resolving difficult problems and assignments were made for work which needed to be done. Requests and needs were presented to the entire group for solution. The meeting lasted for an hour and 50 minutes and, when it terminated, the city officials felt that they had received a fairly good picture of the overall dimensions of the problem.

The following example, although limited to a discussion of the restoration of electricity, water, gas, sewage disposal, and telephone service, illustrates the extent of disruption and the organizational activity surrounding the restoration of minimal community services following the Alaskan earthquake. Particularly in regard to what types of organizations become involved in performing specific tasks, it is fairly representative of the "typical" disaster situation.

When the earthquake hit Anchorage, public utilities were rendered inoperable and transportation and communication lines were disrupted. Such fundamental community services had to be partially restored in order that rescue activities and basic community services could function.

Power

The earthquake disrupted all electrical power sources in the area. Initial response centered on checking the generation facilities and transmission lines -- the former to assess damage and restore generation and the latter to determine the capability of transmission lines to carry the load.

Upon arriving at the city generation facility, crews from the municipal light and power company discovered that the natural gas supply had been cut off and they worked to switch the large turbines to diesel fuel. By 7:00 p.m. the conversion to diesel fuel was completed and one generator was started at the municipal plant.

Meanwhile, personnel from the Chugach Electric Association checked the Knik plant and discovered sufficient structural damage to discourage any effort at restoring it that night. There was no power coming from Bernice or Cooper Lake power plants, and the Eklutna substation in Anchorage reported no power input from the Bureau of Reclamation lines. Although the Cooper Lake facility was producing power by 7:00 p.m., damaged transmission lines and roads made it impossible to provide power for Anchorage area customers. Although CEA personnel continued to check their facilities, the only source of power during the first four and one-half hours was the single large city turbine, started at 7:00 p.m., which could produce only a fraction of the power needed to supply the community.

At 10:00 p.m. the CEA was able to restore power to about 75 percent of its customers. This lasted only for an hour because the Eklutna facility lost its water supply and went off the line again. About the same

time, the city turbine also stopped due to a ruptured oil line. The city was again plunged into darkness except for small generators at a few key spots.

At this time the CEA personnel began assisting the ML&P crews since their own sources of power generation were out of action. The problem was twofold: restore a steady fuel supply and start the turbines again. The 3:00 a.m. meeting produced the information that the military power generators could supply some electricity to the Anchorage system.

In spite of this, the city remained without effective power until 8:00 a.m. Saturday morning, when one of the city turbines was again repaired. During the day, ML&P and CEA crews worked constantly, attempting to hold the power sources steady and to expand the area being serviced. The city turbine, Eklutna plant, and military generators were supplying power by the mid-afternoon.

By 5:36 p.m. Saturday, 24 hours after the earthquake struck, the Anchorage area was receiving power on a fairly reliable basis; 95 percent of the customers in the area were being served. While massive repair and rebuilding would be required to restore electric service to their pre-quake level, there was sufficient power available on a fairly steady basis for immediate tasks and needs. This restoration of power had been accomplished by the following organizations: ML&P, CEA, the Bureau of Reclamation, state civil defense (coordinator), police department, Anchorage Natural Gas Corporation, Elmendorf Air Force Base, and Fort Richardson Post.

Water

Land fractures and slides caused many breaks in the water distribution also. Three of the seven city wells were destroyed and landslides along the banks of Ship Creek above the dam temporarily stopped its flow into the reservoir. The water treatment plant seven miles out of town was damaged but operative. With power off, none of the pumps was working and breaks in the underground water mains drained the system.

Immediately after the impact, efforts were made to keep the treatment plant operating, but water was disappearing rapidly. Water division personnel began turning off the valves of water mains at the east end of town where the main line entered the city. By 8:00 p.m. there was water available at the east end. Within

another hour and a half service was restored to the first major subdivision, Mt. View. Efforts were then made to route water to Providence Hospital through undamaged mains. This was accomplished by 11:30 p.m. From this point throughout the night crews continued turning off water in damaged areas and attempting to restore service.

With all of the systems in the city losing water, Ship Creek Reservoir was rapidly lowered to the point where surface ice began jamming the intakes. Thus, when at 4:00 a.m. two sizeable sections of the city were ready for water, there was no surplus available. Reservoir supplies were very low and there was no power at the wells to pump them. As soon as firm electrical power was restored on Saturday afternoon, however, well pumps were activated.

Eventually the distribution system was separated into three major independent sections to prevent water loss in one section from draining the entire system. Crews continued working within each section, expanding the area being serviced. By 3:00 a.m. it was announced that water had been restored to Mt. View, Grand View, City View, and Providence Hospital. Water was restored to the Spenard area the morning after the quake, and within 24 hours, to 75-80 percent of the residential areas. By Sunday evening, water was available throughout the city except where major slides had completely severed mains.

On Monday, aluminum irrigation pipe with connectors for garden hose was ordered from Seattle suppliers. This was used for surface distribution in the slide areas. On Monday evening, at the mayor's request, water division crews concentrated on the downtown business district so that businesses, especially the banks, could reopen Tuesday morning. But full service to all city consumers was not restored until April 8, thirteen days after the earthquake.

While the water department used the services of various other community organizations, such as the mass media in broadcasting information to the community, the military, etc., they did not begin using large numbers of volunteers until after Tuesday. The system was underground and experienced personnel knew where to find valves and mains. Even with maps, men were still needed who knew the system; otherwise hours could be lost hunting around in the snow or thawing at the wrong place.

Sanitation

Most of the damage to the sewage system occurred in the slide areas where other underground utilities were also most heavily damaged. Refuse trucks housed in rented warming sheds were also damaged when the walls collapsed and the roof fell on them.

There was little activity or concern directed toward waste removal during the first twelve hours after impact. Most of the sanitation personnel in the public works department assisted the police and fire departments and performed general search and rescue tasks. There was no official effort directed toward problems of sanitation and refuse, although one city surveyor did inspect a number of sewers and reported that only about one in ten showed any signs of activity.

On Saturday the trucks were freed from under the collapsed warming shed. The last truck was freed at 3:00 p.m. and the shop crews worked until 11:00 p.m. repairing them. Besides the work with the trucks, emergency disposal containers for human wastes were distributed on Saturday. All available chemical toilets or modified 50-gallon drums were placed in institutions and centers where toilets could not be used. By Sunday morning, a drum or other container for human wastes had been placed within two blocks of most homes in the slide areas.

Systematic checking of the sewers did not begin until Sunday morning, more than 36 hours after impact. Public works personnel aided by Department of Health sanitarians performed the tasks. At about 3:00 p.m. Sunday the director of public works assigned sewer operations to an experienced PW employee. Information available at that time indicated that extensive restoration would be necessary. With 14 men at his disposal the newly appointed sewer foreman began systematically searching out breaks in the main lines -- which were now apparent since water was restored -- checking lift pumps and outfalls.

On Sunday the new sewer foreman asked for assistance. The city engineer took charge of emergency construction of sewer lines; by early Monday, he had arranged for local contractors to begin digging and laying temporary lines under his supervision. Restoration of main lines in areas of complete stoppage was given priority, along with pumping to get around obstacles in the system. Heavy pumping operations had to be maintained for over

a week. The 24-hour-a-day effort to construct temporary lines and interconnect sanitary and storm sewers where needed and possible lasted two weeks. It was estimated that about a mile of sewer piping was installed during this period.

On Sunday a news bulletin released by city CD informed the residents that sewage disposal was improving rapidly. Most residents were told to use toilets as usual, though some persons, such as those on Government Hill or in the Turnagain area, were advised to place human waste in plastic and paper bags or use barrels. The public works department would pick up these wastes beginning Monday.

On Monday morning refuse personnel, using the battered but operable trucks, covered the normal garbage collection routes for both Saturday and Monday. Other city employees worked at cleaning up and hauling away debris along streets and sidewalks. Refuse and sanitation personnel also assisted in water testing and spread chlorinated lime on exposed sewage. A few additional chemical toilets were located and distributed.

During the rest of the week sanitation crews maintained their normal collection routes and provided assistance elsewhere as needed to gain and maintain control of the waste and refuse problem. In spite of numerous problems, sewage disposal was soon brought back to normal standards.

Gas

With regard to the natural gas distribution system, there was no appreciable damage to either the wells or the 12-inch transmission lines outside the city. However, within the metropolitan area there were numerous breaks in the distribution system. By comparison with underground water and sewer piping, gas distribution lines suffered fewer ruptures even in major slide areas.

Gas company personnel reported to work soon after the temblor had subsided. A large break in the distribution main for more than 80 percent of the system was found. It was noted, however, that service could be continued to the Alaska Methodist University-Providence Hospital area by shutting off a block valve on the ruptured distribution main. Thus, about 10-20 percent of the community continued to receive service after impact.

Damage assessment continued throughout the night. It was found that it would be possible to restore service systematically from point of entry, moving toward fractured areas. Company officials realized, however, that they would need additional skilled help. One of the staff members was sent to "either Fort Richardson or Elmendorf" with instructions to find whatever communications were available and to request help from gas companies in the Pacific Northwest area.

By 10:00 p.m. gas company crews had begun laying an above-ground loop of 3-inch pipe to bring gas from the Alaska Methodist University-Providence area to the section of the city isolated by valving off the ruptured main line at Third and Post Road. By 6:00 a.m. the next morning this temporary loop was completed and crews could begin restoring service to the larger system.

A second major emergency effort initiated within 12 hours after impact was the laying of two above-ground pipes to the municipal power plant to restore gas service to the turbines there. This job was completed by 4:00 a.m. Sunday, about 34 hours after the earthquake occurred.

On Saturday, during the day, gas company crews, assisted by volunteers, began systematically testing lines and restoring service to the isolated area, moving west from the point of entry through the Spenard area and then northward. Testing and restoring lines, bypassing breaks, and relighting technical equipment and appliances occupied the attention of crews around the clock for most of the first week. Service was restored to about 90 percent of the consumers by the end of the first week after impact.

Workmen imported from the Seattle area greatly facilitated this effort. By Monday morning 30 men, representing the full range of skills needed and with hand tools and other equipment, were available to relieve weary local personnel who had been working with very little rest since Friday. During the next four or five days crews in both office and field were composed of about 80 percent "outsiders" and 20 percent regular employees.

By April 14, the vice president of the company reported that operations were back to normal.

Telephone

As with the other utilities the impact disrupted telephone service. Some few calls were made immediately afterward but for the most part it was impossible to get through to the number desired. The aerial line system remained essentially intact except in the slide areas. The underground cables (about 25 miles, mostly in the downtown area) were severely damaged.

In accordance with their emergency plan, most of the employees of the telephone company, which was municipally owned and operated, reported to the main exchange as soon as possible. The first task was to realign and readjust the equipment in the exchanges themselves. All external lines were cut off temporarily until the equipment within the buildings could be righted and the main power shorts eliminated. This was followed by testing external cables, "100 at a time." By 8:00 p.m. there was limited service within each exchange but it was not possible to call between exchanges. Radio-equipped trucks were sent to each of the outlying exchanges to provide a communications link with the main office, and a runner was also sent to city CD to apprise them of the state of the telephone system.

It was midnight before calls could be placed between exchanges. However, it was still impossible to call outside the system as well as to or through other exchanges. Early Saturday morning, crews were assembled and assigned to survey and repair lines between exchanges and trucks still out of service. At 3:00 a.m. it was determined that about 1,600 lines had been restored and that equipment was about 65-70 percent operational. About 2,400 lines had to be restored yet, and restoration was currently proceeding at about 100 lines an hour, but much of the damage remained to be assessed. Priority was given to institutions, doctors, emergency crews, key workmen, etc. The public was requested to stay off the lines except for extreme emergencies to prevent overloading.

Long distance cables to Alaska Communication System (ACS) were severed by the Fourth Avenue slide. Efforts were undertaken to repair the cables by stringing a new cable to the ACS facility. This work was completed at 1:05 p.m. Monday -- about 67 hours after impact -- thus connecting the community with the "outside world" again. Military crews assisted in this effort.

By late Sunday afternoon the telephone utility could report that 90 percent of the system was operational, although extensively "jerry rigged."

Overloading became a critical problem as more lines were restored. On Monday another appeal was broadcast asking private users to refrain from telephoning except in extreme emergencies. Lines were so overloaded that some of the circuits were going out. This appeal was made again Tuesday afternoon followed by a temporary disconnecting of residential lines on the main exchange. Overloading remained a threat for some weeks after the emergency. As late as April 16, residents were still being asked to curtail non-essential calls.

The preceding example does not include all of the activities related to restoring community services that were undertaken during the Alaskan earthquake. For example, the restoration of transportation arteries and mass communication facilities was not discussed. The example, however, does illustrate the following basic social and technological factors involved in this restoration.

First, the tasks of restoration usually fall upon those established community organizations that perform qualitatively similar operations in their day-to-day functioning, i.e., telephone, electric, water, gas, sanitation, etc., companies and city departments. In the post-impact period the expectation of involvement on the part of these organizations is normatively based. These organizations have the resources, skills, technology, and experience necessary to perform these tasks. This resultant similarity in task performance provides a "bridge" between the pre-impact and post-impact periods.

In the above example, all of these services were restored mainly through the action of these established organizations. While the quantity of the demands made upon these organizations was obviously greater than during a "normal" period, the quality of the demands remained virtually the same. Furthermore, the personnel in these organizations had necessary skills to perform these tasks, and little use was made of volunteers. In fact, when additional help was needed -- such as when the gas company desired aid -- workers with similar skills were brought into the community from outside areas rather than utilize volunteers.

Second, "repair," "replacement," "elasticity," and "substitutability" are all viable methods of restoring essential services, however all of these methods may not be applicable to a specific task. For example, in the restoration of power, "repair" and "replacement" were utilized. With gas, sanitation, water, and telephone service, however, "substitutability" was also employed. Portable toilets and barrels were substituted in the normal sewage system. Garden hose was substituted for pipes and tubing. Finally, a form of "elasticity" was used in restoring telephone service in that calls were limited, and the operable units of the system were "stretched" to capacity.

Third, a priority is placed upon first restoring essential services to those areas of the community that are performing vital functions in the post-impact period. Those units involved in search and rescue, caring for casualties, preserving life, coordinating community response, etc., are defined as

the segments of the community that must be restored first. With regard to the restoration of the water system, priority was placed on restoring the water flow to Providence Hospital. Similarly, initial efforts in restoring the distribution of natural gas centered upon continuing service to the Alaska Methodist University-Providence Hospital area. Finally, definite priorities were placed on the restoration of the telephone system. Priority was given to institutions, doctors, emergency crews, key workmen, and others directly involved in post-impact activity. The public was asked to stay off the lines except for emergency calls, some residential lines were disconnected, and as late as three weeks after the quake residents were still being asked to curtail non-essential calls.

Finally, it should be noted that the restoration of these services is highly interrelated. In other words, the restoration of any one service may be dependent upon the availability of the other services. Of course, this condition is not inherent only in the post-impact period. The same inter-relationship among services exists also in the pre-impact period. The unavailability of a key service, however, may render the restoration of other services extremely difficult. For example, the restoration of power was dependent upon the availability of a natural gas supply. The sanitation system was dependent for its operation upon the functioning of the water system.

Caring for Survivors

All disasters create survivors. While there have been a few isolated instances of extreme devastation in which the entire population of a village or area was totally destroyed, in almost all disasters there have been survivors for whom care must be given. This has proven to be the case in even some of the most devastating disasters in history. In Vaiont, Italy, for example, 2,500-3,500 persons were killed in a sudden dam disaster, however 60 persons did survive. In one of the most devastating manmade impacts of all time, only 30 percent of the population of Hiroshima perished. In fact, there is some evidence that people survive disasters in a far better condition than do buildings and other physical objects.⁸

Care must be given to these survivors. In the post-impact period, the expectation that the community will offer care to its surviving members becomes normatively defined. Measures are instituted to provide the basic requisites -- food, clothing, and shelter -- that are essential for the well-being of the surviving population. In order to better understand how this task of caring for survivors becomes defined as a legitimate community enterprise, let us first discuss the disbursement of these basic human needs in the pre-impact period.

In the pre-impact period in American society, these needs are distributed to the vast majority of the population through the economic institution. Furthermore, the major methods of producing these commodities are also imbedded in the profit-based economic system. The population of the community not only supports this vast institutional complex of producers and distributors by fulfilling the role of consumer, but also imposes sanctions upon those who attempt

to secure these commodities by "non-legal" means. For most of the community members, therefore, these needs are obtained through the process of purchasing the commodities from one of the distributive outlets in the system. Whether it be a gallon of milk and a loaf of bread, a pair of shoes, a \$40,000 ranch home, or 50-cent space on the floor of a "flop house," the process is the same.

For certain members of the community, however, these needs are secured through public agencies by means of public assistance in the form of welfare. Social and legal approval has been given to the community to aid certain members in obtaining these needed commodities. These community members are those who are unable -- for various reasons, usually financial -- to purchase these items without the assistance of public welfare. While the aid often is given in the form of money to be spent as the recipient chooses, some of the assistance is distributed in a manner that allows the purchase of only certain, specified items, i.e., the food-stamp system. Although this system has become institutionalized, a stigma surrounds the recipient who is "on welfare." It is expected that he will only be "on welfare" until he is able to support himself and his family, i.e., play the "consumer role" without public assistance. Therefore, the role of "recipient" is one in which the incumbent is not to remain for an extended period of his life. Often he is "blamed" for being on public aid; it is "his fault" that he needs assistance. His status as a "welfare recipient" is not esteemed by the larger community, nor in some cases even approved. Therefore, while legally approved and institutionalized as a method of aiding the distribution of the basic needs of food, clothing, and shelter to certain segments of the population, a certain stigma surrounds the recipient of welfare in the pre-impact period.

After the impact of a disaster agent, many surviving community members are in need of these basic commodities. Obviously, the family that has lost its home and belongings is in need of these basic human requisites. Other community residents, however, who have not been so directly struck may still be in need of such things as food. With electric and gas service often disrupted, the preservation and preparation of food within the home is often impossible. Furthermore, the volunteers, workers, and outside personnel who converge on the impact zone from the surrounding area may also need food and shelter. Finally, if evacuation has taken place, as in many flood situations, the entire community may be in need of these basic commodities.

The question then becomes, how is care to be given to these survivors? Often the technological means of distributing food, clothing, and shelter have been destroyed. Stores and producing plants may have been severely crippled by the impact. Transportation facilities often are disrupted, thus isolating the community from its normal external production units and often breaking the normal systemic relationship between the food-producing hinterland and the food-consuming community. In short, often the normal, day-to-day functioning of the economic system is not possible. These needed commodities cannot be distributed in a normal manner, i.e., by purchasing.

It is often found, however, that even in those situations where food and clothing could be obtained by the survivors by the normal process of purchasing them from a distributor, this procedure is not universally adopted. As was

previously mentioned, a high value is placed on preserving life in this period, while economic activity is given low priority. The expansion of the citizenship role combined with the emergence of norms favoring altruistic behavior highlight the social context of this period. For these reasons, therefore, it becomes normatively defined that the normal economic institution is not the answer to offering care to the survivors. (One should not make a profit from the misfortunes of other people.)

Where does one turn for care? The sheer volume of those needing care may be enormous; it can conceivably be the entire community. The pre-impact system of welfare is unable to cope with a situation of this type or magnitude. Not only are the agencies geared to handling a smaller number of clients, but the type of aid they are able to offer -- money, food stamps, etc. -- is inappropriate for the situation. The survivors need food, not food stamps; clothing, not money; and shelter, not housing subsidy.

Into this institutional void come those community welfare organizations that are equipped to handle massive care activities, such as feeding and sheltering survivors. Normally, the Red Cross and the Salvation Army, obviously aided by other local organizations, become socially and often legally defined as the community organizations responsible for coordinating and instituting the care of the survivors. Furthermore, it also becomes expected that these commodities will be given to the survivors "free of charge."

In effect then, the community has institutionalized a type of welfare program as being the proper method for distributing these needed commodities to the surviving population. It should be noted, however, that no stigma is attached to being a recipient of this aid, as it is often applied to welfare aid in the pre-impact period. Of course, the great number of recipients is part of the reason for this lack of "shame," everyone may be "on welfare." Also, the norms favoring altruistic behavior and preservation of life make this type of aid acceptable. Furthermore, the role of "recipient" is obviously not a permanent one. The aid is normally short-term. It lasts until needed utilities are restored and the community is "back on its feet." Even the longer range process of rehabilitation does not normally accrue negative sanctions to the recipients; it has a definite, foreseeable termination. Finally, in the vast majority of disasters, the recipients are not to "blame" for their status. They did not "cause" the flood, hurricane, or earthquake. They were only innocent bystanders caught in the grips of an "act of God." While welfare recipients prior to the impact may be blamed for their status and thereby negatively sanctioned, it is difficult to so label disaster survivors.

In the remainder of this section, we will be concerned with more specific aspects of the institutionalized aid to survivors. As stated, in a disaster it is expected that community welfare organizations will become involved in caring for the survivors. In Chapter VII we will discuss the formal structure of these organizations. In the present section, let us first focus upon the three major needs that must be fulfilled -- food, clothing, and shelter. Second, we will consider what organizations become involved in fulfilling these needs. It will be noted that while the Red Cross and Salvation Army are the

major relief organizations, they utilize the resources and personnel of various other local groups. Finally, a brief word will be given about the process of rehabilitation.

The Needs

Food

In the disaster period the normal economic distribution of foodstuffs is often suspended. Some procedures must be instituted for the procurement and distribution of food to the surviving population and to those who have come to offer aid.

In the Alaskan earthquake the following procedures were instituted:

In Anchorage, food was provided on Friday night two and one half hours after impact. At 8:15 p.m. the first truckload of food was dispatched from the Salvation Army Men's Service Center at Eighth and "C" Streets to the Federal Building downtown where clean-up crews were preparing a shelter. As refugees came in they were offered coffee and food. At 2:00 a.m. the coffee operation was moved from the Men's Center to the Federal Building. Food was also served to personnel and refugees at Salvation Army headquarters at Eighth and Barrow during the night.

Other food services provided for the community on Friday night came from the American Legion Post on Fireweed Lane which served nearby radio station personnel, employees at the airport, and also sent a lunch wagon downtown to serve rescue and other emergency workers. The YMCA also became involved in food service early in the evening, serving coffee and sandwiches to evacuees, rescue workers and anyone else that came by.

At the 3:00 a.m. meeting in the Safety Building emergency food needs were discussed. It was felt that mobile kitchens would be needed to feed many people who had no facilities to cook hot meals. With many homes and apartments unheated the need for hot food seemed more acute. The military agreed to provide mobile field kitchens for this purpose. These kitchens were placed at three sites: in the park behind the Safety Building, on the park strip between "K" and "L" Streets, and at Wendler Junior High School on Lake Otis Road and Northern Lights Boulevard. It was announced that these three kitchens would be ready to serve at 9:00 a.m. The military released the three kitchens and food for 1,000 persons to the Public Safety Building at

6:46 a.m. Mass feeding by these mobile kitchens continued through April 1, the following Wednesday. Three meals were served daily to anyone who came through the lines.

The American Legion Post continued its food program on Saturday and throughout the emergency period. Most of the service involved their own staff and persons lodged at the post. A total of 6,000 meals were served during this period. The YMCA accelerated its food service effort on Saturday and for the three days following. They reported preparing 2,000-3,000 sandwiches daily and over 1,000 gallons of coffee throughout the emergency period. On April 2 they were still feeding about 600 people daily. The Red Cross covered the cost of much of this food.

Food service in the Government Hill area was provided by the restaurant in the Anchor Bowl establishment. Elmendorf Air Force Base personnel brought pure water. Food was purchased from local wholesale establishments. This was the only food facility in the area, and they were asked by city officials to remain open. This restaurant did not serve meals free of charge as was the case with all other emergency feeding described here.

Aside from the military field kitchens, the Salvation Army was the largest supplier of emergency food. At the peak they reported making about 1,000 sandwiches and 110 gallons of coffee an hour at their Men's Service Center. Ten mobile canteens loaned from local canteen establishments were transporting food to various places in the city. An average of 1,200 sit-down meals were served daily at the Salvation Army center; 4,800 meals daily at other points.

Food was also provided at the Providence and Alaska Native Service Hospitals. Providence reported 1,000 meals while ANH reported serving 1,575 during the week.

With the restoration of utilities over the weekend and the opening of stores on Monday and Tuesday, most persons in the community went back to their normal eating arrangements. Free food was still available in the Safety Building, YMCA, and at Army field kitchen locations, but demand diminished rapidly. Mass public feeding had been terminated on April 2 because there seemed no further need for it.

Concerning the above example, it must be noted that the absence of a detailed description of Red Cross activity can be explained on the basis that the local chapter was one of the few Anchorage organizations severely affected by the quake. Its office, records, and materials were destroyed. Much of the activity within the community was carried on by personnel from the Western Region. Major Red Cross activity occurred outside Anchorage and in the rehabilitation period.

It must be noted that while the Salvation Army performed a major role in distributing food to the survivors, various other local organizations also were involved. The Salvation Army is seen as a legitimate relief organization in disasters. In this instance, it was aided by such various groups as the military, the American Legion, the YMCA, and two local hospitals. It would appear that in a disaster, due to the problems of procuring and distributing food combined with the always prevalent difficulties concerning communication and coordination, any legitimate community organization with appropriate facilities and personnel may become involved in this activity. When the organization has a "community service" orientation, it may be particularly inclined to help.

Finally, the sheer volume of those who received food from these organizations should be noted. Thousands of meals were being served daily for almost one week. The Salvation Army, due to its facilities, personnel, location, and saliency to the public as a relief organization, served the largest number of people. When utilities were restored, however, this welfare program was disbanded. There is no evidence that any stigma was attached to receiving free food.

Clothing

In widespread disasters in which many homes have been destroyed, the surviving population is often in need of clothing. That the home must not necessarily be destroyed to create such a need is illustrated by a flood situation. It falls to the community and its welfare and relief agencies to collect and distribute clothing to the survivors. The coordination of this activity normally becomes the task of the Red Cross and the Salvation Army. As we shall see, this task is not an easy one, and is often complicated by the large quantities of clothing that converge on the disaster site from the outside area.

Actually in most disaster situations, there is no shortage of clothing. Usually clothing is sent into the area in far greater quantities than the situation demands. The "cornucopia" effect has been noted in many disasters. The spontaneous generosity of this unsolicited aid, while it obviously facilitates the care of survivors, also has a number of negative consequences.

Fritz and Mathewson state that these supplies: (1) normally arrive in volumes far in excess of the actual needs, (2) in large proportion, are composed of unneeded and unusable materials, (3) require the services of large numbers of personnel and facilities which could be allocated to more essential tasks and functions, (4) often cause conflict relations among relief agencies

or among various segments of the population, (5) materially add to the problem of congestion in and near the disaster area, and (6) in some cases, may be disruptive to the local economy.⁹

After noting that the volume of material aid normally tends to decline with distance from the disaster area, Fritz and Mathewson discuss the role of the mass media in inducing this convergence.

Unquestionably a major factor in the great volume of material convergence is the use of radio and other mass media of communication in disseminating supply appeals. The needs in disaster are strategic and selective needs. Equipment, supplies, and services are needed in particular quantities, types, times, and places. The mass media are not well adapted to serve this strategic supply purpose, since there is little control that can be exercised over the potential donors once the appeal is made. The central difficulty in the use of these media, in other words, is that they require institution of a screening function after the supplies begin arriving rather than prior to their solicitation.¹⁰

Some of the problems created by excess material convergence are illustrated in the Waco, Texas tornado.

The flood of donated supplies and equipment coming into Waco early provided a problem, because no provision had been made for a central place in which such material could be received and from which it could be dispatched to the points needed. The chief of police said many persons would call and offer types of equipment or even manpower that were needed and would be told to please come to Waco as quickly as possible, but "a little later they would call and tell us they couldn't get into a certain place in town or they couldn't get into the downtown area due to traffic congestion."

. . . No value was estimated for clothing since appeals had brought such a staggering response that workers were almost crowded out of the building. A full month after the tornado shipments of clothing were still arriving for use by the Salvation Army. Many of these were so badly worn they had to be sent to rag collectors, and other bundles required laundering -- done free by local companies -- but there remained a surplus of usable clothing.

. . . When a warehouse was opened and sorting of clothing began, it was discovered that a number of persons appeared and began to grab clothing on the pretext of being volunteer workmen. Clothing was sorted according

to age, sex, work clothes, winter clothing, and summer clothing, and placed in boxes and tagged for future use. After the disaster was over, some three tons of clothing remained on hand /in the Salvation Army warehouse/. This was made available to the various agencies in the city dealing with destitute families.¹¹

As the above illustration indicates, procurement of clothing is not a problem for the local relief agencies. They are literally "swamped" with articles to be distributed. Problems, however, do center around sorting the clothes, distributing the usable items to the needy in the surviving population, and in many instances finding some method for utilizing the surplus. Normally, the Red Cross or the Salvation Army will take command of this distribution. Personnel from various other local organizations, such as local service, fraternal, and church groups, may be utilized to sort and distribute the clothing. In all instances, however, a central control center -- normally in a location that is both spatially adequate, such as a warehouse, and near to the area of destruction -- must be established. Procedures for issuing the clothing and the public announcement of these procedures along with information concerning the supply and location of the clothing must be initiated. Once more we see that coordination and communication are crucial to the efficient completion of a disaster task.

Shelter

Some type of shelter must be provided to those community members who are left homeless after a disaster impact. When one normally considers shelter, one thinks of the formally organized, staffed, and stocked facilities instituted by organizations. In many disasters, however, where the devastation has not been total and where a sizable proportion of homes remain habitable, the homeless take shelter with relatives, friends, and neighbors. This type of shelter aid often exceeds that of the formal shelters. It may constitute only one family moving in with another, or may become a form of neighborhood shelter in which one family cares for many others.

How a neighborhood shelter may be established was evident in the Alaskan earthquake. Surveys made after impact showed 971 out of 12,747 units had sustained 60 percent or more damage. These were considered totally destroyed. Half these units represented large apartment houses. Over 200 were private dwellings. Using the arbitrary occupancy figure of three per unit would indicate that at least 3,000 persons needed shelter. With electricity, water, and gas off and buildings partially damaged, many more were apprehensive about remaining in their homes or apartments. Many did go to the homes of friends or family members. Informal groups congregated wherever someone had heat and light. In fact, it would seem that the majority of those who left their residences congregated eventually in small groups at the homes of friends and neighbors. The account of one person involved in such a neighborhood group is illustrative. This family had followed civil defense instructions for shelter stocking and thus had fresh water, a transistor radio, a portable vaporless kerosene heater, flashlights, batteries, etc.

Right after the quake, we were still at home there /picking/ up around the house. Two young ladies who were on the 13th floor of the 1200 L Street building, a 14-story apartment building, came running up our front path. There was still plenty of snow on the ground and it was about 15 degrees outside. They were barefoot and white. . . . They were pretty well worn to a frazzle after running three blocks in the snow. . . . So we took them in and all of a sudden people began to appear from I don't know. . . . Three, four, or five maybe at a time /arrived/. . . . So we first established the heaters and set everything up for lights and food and so on. /People were clustered around the transistor radio.⁷ People began to dwindle away a little bit after 15, 20 minutes. Everybody slept in the living room. We sat up most of the night and had several quakes after that through the night. . . . We had to be careful because we did have the lightings, all fire of some sort or another, and we made sure that one individual was assigned to take care of each appliance. If we began to get a little shake all these things went out.

That this type of shelter activity is as extensive as it appears has ramifications for the operation of the local relief organizations. Without considering the number of survivors who will receive shelter from sources such as the above, it is quite easy for a local relief agency to overestimate the need for formal shelter facilities. When this overestimation occurs, it results in a waste of personnel, resources, and time when these commodities are short on supply and could be more rationally allocated to more pressing problems.

Of course, some type of community shelters or welfare centers, adequately staffed by trained personnel and stocked with needed supplies, is required in the post-impact period. Typically, in disasters within the United States, governmental agencies, the Red Cross, or the Salvation Army establishes these shelters with the aid of various local organizations. These organizations survey undamaged public buildings near the impact area and designate some of them as shelters. These buildings may be chosen because their floor space and other facilities are considered relatively adequate for the task. Furthermore, these buildings often occupy locations that are salient to the community members. Schools, armories, gymnasiums, hospitals, churches (with permission), depots, etc., are often selected. Information concerning the location and functions of the shelters is then disseminated throughout the community, often via the mass media. Refugees who happen to have congregated in other locations are gathered and sent to the designated shelters.¹²

Various other facilities besides housing are often provided in these shelters. Medical care, food, and such services as infant care often make these locations "welfare centers" as much as shelters. For example, in 1937 during the flooding of the Ohio and Mississippi valleys, the Red Cross was involved in an extensive shelter program. As the following example shows, these shelters and tent cities were more communities than simple housing areas.

Once rescue and evacuation were completed in a particular area, Red Cross chapters devoted their full attention to care of the refugees in the temporary shelters. With the help of the Army and National Guard, the Red Cross established over 1,500 refugee centers and tent cities all along the Ohio and Mississippi Rivers. A tent city was similar in many respects to a small community. It had running water, electricity, sufficient sanitary facilities, and sufficient heat for comfort and food preparation. In addition to the small 16' x 16' tents utilized for family sleeping quarters, there existed separate tents for hospitals, large kitchens and mess halls, warehouses for supplies, and offices for camp business.

Personnel from the Red Cross, as well as those from other agencies, carried out many of the necessary tasks in the tent cities. Among the active Red Cross personnel were national staff, family case workers, disbursing officers, building advisors, recreational advisors, home economists, supply officers, regional medical advisors and physicians and nurses.

In all, 698,103 persons were housed and cared for in one of the 1,575 centers and camps. At least 73,817 families were placed by the Red Cross with relatives and friends.¹³

While the normal community disaster does not present shelter problems of this magnitude, it does require the efforts of many community organizations. The activity must be coordinated. Normally this task falls to the local relief organizations who utilize the available resources of other community organizations. Personnel must be assigned to shelters who are trained in survivor care or have relevant skills. Bedding, sanitation facilities, water, etc., must be procured and stocked. As we close this section, let us turn once again to the Alaskan earthquake for an example of how these shelters may be established and maintained. Particular note should be made of those local organizations, other than the expected relief organizations, that became involved in these tasks.

The first public shelter to be established and publicized as a shelter was an American Legion post on Fireweed Lane close to the Turnagain area. Within a very short time after the quaking had subsided, the commander arrived at the building, which served as something of a community center for members and their families. Finding the building intact he issued a call over KFQD for all members to meet there. The decision to set up a shelter came soon after this and members dispersed to locate a generator, get water, etc. One was sent to the nearby radio station to ask

the station to carry the announcement that the building was open as a shelter. Fortunately this shelter was fairly well organized. Each incoming person was registered. Records show that 1,482 persons entered the post on Friday night and 375 remained until morning.

Another effort emanated from the Safety Building. The disaster control group sent crews into the post office, the city hall annex, and the community center to clean up debris and make them habitable for shelters. Cots and bedding were procured from the military through their liaison at the Safety Building. The Salvation Army supplied supervisory personnel at the post office. While information about the number of persons served was scanty, the next morning most of them left and did not return.

Announcements concerning the availability of shelter at the American Legion and downtown were made before 9:00 p.m. Other buildings which were reported available were: the American Legion building at Dawson and Northern Lights, the city jail, the Spenard public utilities building, the Odd Fellows Lodge, the National Guard armory, carpenters hall, the YMCA, and the Edgewater Hotel. In addition to these, it was reported between 8:00 and 11:00 p.m. that four churches were opened for shelters.

Unannounced shelters, besides those involving small neighborhood groups in homes, developed at the hospitals. Many of the physicians' and staff members' families spent the night at the hospitals. Many others also came in and slept in hallways. At the Public Safety Building, people slept upstairs in the firemen's quarters -- some on the floor, some on cots. Others sat in corners or against the wall in the lobby and dozed.

No figures are available on the total number on Friday night at places other than their normal residence. Listed here are the figures for shelters where a count was made: Jack Henry post, 375; post office, 175; National Guard armory, 90; YMCA, 200+; Salvation Army headquarters, 100.

Emergency housing at public shelters was all but discontinued by Saturday night. Most displaced community members had by then found lodging. However, a few shelters continued operating over the weekend. At the "Y" housing was provided for more than 200 persons for five successive nights. The American Legion post

provided lodging for a much reduced number on Saturday night, largely because many local residents telephoned offering rooms and apartments.

A Salvation Army official reported that appeals for temporary housing for the victims were broadcast Saturday and that more than 500 homes were offered for displaced persons. As he saw it, "housing was no problem after the first night." After the emergency period, the Alaska State Housing Authority took over the housing problem.

From the above examples, it is obvious that many different organizations become involved in these activities. We have seen such groups as the military, church organizations, American Legion posts, fraternal organizations, the YMCA, local government, local utilities companies, and private concerns such as hotels provide personnel and facilities for the care of the surviving population. While these groups obviously play an important role in relief to the stricken population, the major task of coordinating this relief and often instituting major segments of it falls to the Red Cross and Salvation Army. These organizations have as a part of their normal pre-impact activity the goal of preparing for disaster relief and offering care on a massive scale. At the time of a disaster, these organizations have a normative and legal mandate to operate in this area. Furthermore, their involvement is expected by the community.

Conclusion

In this chapter we have considered three types of post-impact activity. The specific tasks involved in (1) protecting against continuing threat, (2) restoring minimum community services, and (3) caring for survivors were presented. Furthermore, the local organizations which become involved in performing these tasks and certain of the problems they face were indicated. Throughout the chapter the problems of communication and coordination have been stressed.

FOOTNOTES: Chapter V

1. These tasks related to protecting the community against continuing threat must not be viewed as accruing after rescue and before restoration of essential services. These activities take place throughout the post-impact period and may utilize community resources that might be employed for other tasks involved in the community response to the disaster.
2. The Scientific Study of Natural Disasters and of Means of Protection Against Them (Paris: United Nations Educational, Scientific, and Cultural Organization, 1966), pp. 8-9.
3. John Castile Kennedy, The Great Earthquake and Fire: San Francisco, 1906 (New York: William Morrow and Co., 1963).
4. E. L. Quarantelli, "Mass Behavior and Governmental Breakdown in Major Disasters: Viewpoint of a Researcher," The Police Yearbook, 1965 (Washington: International Association of Chiefs of Police, 1965), pp. 105-112.
5. Jack Hirshliefer, Disaster and Recovery: A Historical Survey (Santa Monica, Calif.: U.S. Air Force Project RAND, 1963), p. 9.
6. F. C. Ikle, The Social Impact of Bomb Destruction (Norman, Okla.: University of Oklahoma Press, 1958), pp. 7-8.
7. Hirshliefer, op. cit., p. 8.
8. Ibid., pp. 10, 12. In Hamburg, 50 percent of the buildings were destroyed while population casualties were three percent. The atomic explosion at Hiroshima destroyed almost 70 percent of the buildings as opposed to 30 percent of the population.
9. Charles E. Fritz and J. H. Mathewson, Convergence Behavior in Disasters: A Problem in Social Control (Washington: National Academy of Sciences-National Research Council, 1957), pp. 22-23.
10. Ibid., p. 26.
11. Harry Estill Moore, "Cities in Crisis: A Study of the Tornado Disasters in Waco and San Angelo, 1953, 1954" (Department of Sociology, University of Texas, 1956), pp. 24-25. (Mimeographed.) Quoted in Fritz and Mathewson, op. cit., p. 25.
12. While this procedure may be typical for American disasters, foreign disasters have shown differing patterns. For example, in the Niigata, Japan earthquake of 1964 the disaster shelter facilities were, in one sense, "chosen" by the refugees. Forced to leave their uninhabitable homes, victims converged on well-known localities -- primarily schools, hospitals, and shrines. When a substantial number of victims concentrated around any

such building, the authorities designated the structure as a refugee center. Thirteen such buildings, ranging from an elementary school housing 2,570 survivors to a small hotel holding 23, were still being utilized in this capacity nine days after the earthquake.

13. Paraphrased from The Ohio-Mississippi Valley Flood Disaster of 1937 (Washington: The American Red Cross, 1938), chap. iv.

CHAPTER VI

COMMUNITY PROCESSES

Introduction

In the three preceding chapters we have been concerned with mainly objective tasks of a community during a disaster. We have focused upon such immediate, observable tasks as rescuing persons, treating injuries, cutting off current to dangerous electric wires, restoring telephone lines to hospitals, and providing food and shelter for homeless families. Many different community organizations become involved in seeking to accomplish these tasks. Their involvement in such activities, however, evokes and necessitates other processes within the community which are less observable, but not necessarily less important. We now turn to a consideration of these processes.

These processes also become specific tasks for organizations. Some of them are extensions of processes which normally "go on" within a community. Others are "new" in the sense of being unusual so existing organizations have no tradition of dealing with them. Two processes which are accentuated by the group and organizational activities within the community are (1) maintaining community order and (2) maintaining community morale. Three other processes are, in effect, generated by the disaster event. These are (1) collecting and transmitting information, (2) controlling activities, and (3) coordinating involvement.

Maintaining Community Order

Carrying out disaster-related activities requires a degree of order within the community. The order of the community is soon "threatened" after disaster impact by convergence. In large part, this fact may be unanticipated by community officials, some of whom probably retain a popular image of a highly fearful or "panicky" mass of survivors who flee from the scene of destruction. In actual disaster situations, the disaster survivors are much more cooperative and subject to control than the persons who begin to converge from outside on the disaster area immediately after impact.

Fritz and Mathewson, who have studied this problem, distinguish three major forms of convergence: (1) personal convergence -- the actual physical movement of persons on foot, by auto or other vehicle, (2) informational convergence -- the movement or transmission of messages, and (3) material convergence -- the physical movement of supplies and equipment. While all three of these types of convergence are related to the problem of order, personal convergence is the major focus of attention here since it provides the initial concern on the part of community officials. For example, in the 1952 tornado in White County, Arkansas, the following illustration is provided:

Virtually all the control authorities agreed that the control of traffic and the movement of population posed the worst problem with which they had to deal, and persons who were engaged in various rescue, medical, and relief activities often reported that the convergence action by outsiders frequently hindered the performance of their functions. Within about an hour after the tornado struck White County, hundreds of autos began moving along Highway 67 and into the disaster-struck communities. . . . This flow of traffic continued for over one week. On Sunday, two days after the tornado, an estimated 1700 cars an hour took to the highway leading into the Judsonia-Bald Knob area, and, according to one of the top Patrol officials, by 10:00 a.m. Sunday morning cars were lined bumper to bumper for 10 miles on either side of Judsonia. Eighty percent of the total personnel of the State Patrol was used in an attempt to unsnarl the massive traffic jam. Emergency vehicles were frequently completely blocked from entrance or exit to the area. The initial external convergence came from immediately surrounding areas and communities. A second wave began later in the evening with persons from more distant parts of Arkansas and surrounding states. Beginning the morning following the tornado, a third wave of outsiders began converging from more distant states.¹

In order to move away from the tendency to categorize all external convergers as "sightseers," Fritz and Mathewson distinguish five different types on the basis of their motivation for convergence. These are the returnees, the anxious, the helpers, the curious, and the exploiters. The returnees are disaster survivors who have evacuated the impact area but who, for various reasons, wish to return to the home site. Their immediate goals are to locate and help other persons, to assess damage, and to protect property. They also may be motivated by the longer range goals of re-establishing social relationships in familiar surroundings. The anxious are concerned with the whereabouts and condition of loved ones. Many of them hope to provide reassurance for those near them who have been affected. The helpers are those who recognize that certain tasks will have to be accomplished. Those who have a personal identification with the victims and spatial proximity to the impact areas will converge early on the area to help. The curious are motivated by the fact that disasters are unique and dramatic and cannot be readily fitted into or explained by previous experience. Their involvement is slight but they wish in some way to "structure" this unique and dramatic experience. The last type is called the exploiters. Logically, disasters provide the opportunity for exploitation in a public misfortune, but the authors suggest that disaster often reduces the motivation to engage in this type of behavior. While admitting the possibility that such a type of person might converge, they suggest that this is not a typical pattern. They distinguish further among the looter, the souvenir hunter, the relief stealer, and the profiteer.

While little systematic research has been carried out to determine the relative proportions of all types in an actual convergence situation, it is clear that the last type, the exploiter, is rare. The first three types are perhaps the most frequent. The returnee feels that he is a "legitimate" converger. The anxious and the helpers also feel that they should have access to the impact area. The culmination of these individual motivations, however, creates mass congestion around the impact area. Attempts then are usually made to block access to the impact area and to develop techniques to screen personnel. This often means developing roadblocks and perimeter guards. It may also mean the development of a pass system. These are concerns, however, which generally have been the source of little previous planning within the community and they are activities which are unfamiliar to most community organizations. Since they directly impinge upon organizations carrying out other tasks, such actions become a focus of confusion and controversy during the emergency period.

As well as the control of convergence, the process of maintaining community order involves the establishment of security lines around the impact area and patrolling and guarding within the impact area. The first efforts at maintaining community order are usually informal and unofficial, but nonetheless effective. For example, as a result of the 1964 Alaska earthquake, there was one slide area in Anchorage where the pavement adjacent to the fault was deeply undercut and appeared at the verge of dropping. People were walking around the undercut pavement. A bystander, at the urging of a reporter, warned the pedestrians and got them off the pavement. He and several others then stationed themselves around the area and kept passers-by off the endangered area. In another incident similar to this, an informal group developed at the Penney store to keep people away from the front from which large slabs and pieces of concrete were sloughing off onto the street.

It is usually, however, established organizations which cope with the tasks associated with community order during a disaster. Regular law enforcement agencies (local police department, sheriff's office, and state patrol) plus the military deal with control of convergence and establishment of security within the impacted community. This is true of very localized disasters, such as the Indianapolis Coliseum explosion in 1963, as well as very diffuse catastrophes, such as Hurricane Beulah in Texas in 1967.

In the case of the local community police, it is sometimes necessary to utilize civilian volunteers to supplement the regular police force. This practice was implemented in Anchorage during the 1964 earthquake and also in Fairbanks during the mid-August flood in 1967. In both instances, the civilians were given identifying armbands and were deputized by the police chief. In most disasters the community faces an indeterminate security and traffic control problem, and consequently the police efforts focus upon guard and traffic control duties. The police are generally stationed at intersections to direct traffic while others are posted at damaged buildings to guard valuables exposed by broken windows or collapsed walls.

In the performance of these tasks, the police are often assisted by other law enforcement agencies such as the state patrol and the sheriff's office. The normal police force plus deputized civilians and these other law enforcement agencies may be inadequate to handle the tasks associated with the community. In such instances the assistance of the military -- National Guard and armed forces -- is sought. The military, for example, played an important role after the Oak Lawn and Topeka tornadoes. Requests for military assistance usually originate from community officials and military officers are careful to place their resources at the disposal of city officials, especially the police. In Anchorage after the 1964 earthquake, the police chief was regarded as having charge of all security and control measures with the military and state police assisting him.

The control of convergence is handled mainly by establishing security lines around the impacted areas. Although the public works may become involved through erecting barricades, it is generally the police and military who establish a cordon and patrol the perimeters of the damaged areas. In large-scale community disasters, military assistance appears to be used extensively in securing the impacted areas. Radio and television stations, as well, assist by requesting that the public stay out of devastated areas. Broadcasts early after impact often urge residents to stay out of damaged localities, but how much influence these public announcements may have upon the convergence which may be already occurring is unknown.

The problem of convergence is much alleviated once barricades have been posted. However, these security efforts tend to create another problem. With a cordon and barricades all around the area, it becomes difficult for rescue, damage assessment, and other emergency crews to move into and out of the area. Furthermore, property owners and business managers desire access to their own establishments. A pass system is usually instituted which may partially cope with the situation although multiple issuing of passes by various groups as in the case of Anchorage during the earthquake may occur. State and city civil defense, the city building inspector, the police, and other officials were issuing passes to the downtown damaged area of Anchorage. Thus, some persons with passes were not permitted to enter because certain of the guards had not been instructed which passes to accept as legitimating entry. After several planes arrived bringing state and federal officials and newsmen, the problem became more acute. Newsmen accustomed to special press privileges became upset when guards would not let them through. They demanded access to get photographs and observe emergency activity.

In summary, it is primarily community emergency organizations which respond to the tasks of convergence control and security of the impacted area. The usual law enforcement agencies plus the military are generally heavily involved in maintaining community order after disaster impact. The instances cited in this chapter refer mainly to the community of Anchorage after the 1964 earthquake. In Disaster Research Center studies of other communities, such as Topeka after the June 1966 tornado, New Orleans after Hurricane Betsy in 1965, and Fairbanks after the 1967 mid-August floods, similar patterns of organizational involvement emerged to deal with community order.

Maintaining Community Morale

After most disaster events and particularly during the emergency period, a considerable amount of attention is given to what can be called maintaining community morale. Much of this activity is predicated on the belief by community officials that disaster impact will have negative effects on the morale of community members. It is often thought that, because of the presence of death and injury, the survivors need extra reassurance. Many agencies and officials assume that all the survivors will withdraw as soon as possible from the impact area. Such officials, concerned about the long-term consequences, fear a mass migration of the population which would leave the community stripped of its human resources at a time when much of the material resources has been destroyed. Such consequences seldom occur.² The concern that they will occur, however, leads to overt activity which has the function of sustaining and supporting community morale.

It has been suggested that one of the consequences of the disaster event on the community level is the creation of solidarity. For those living close together, facing a common problem may bring about the development of organization. The result of struggling with a common problem which stimulates joint action may actually result in a locality's becoming more closely knit than it was before. As Coleman has suggested:

It may seem paradoxical that problems create community organization, but such is nevertheless the case. A community without common problems, as many modern bedroom suburbs tend to be today, has little cause for community organization; neither does a community that has been largely subject to the administration of persons outside the community. When community problems subsequently arise, there is then no latent structure of organization, no "fire brigade" that can become activated to meet the problem.

A new town, a budding community, is much like a child; if it faces no problems, if it is not challenged, it cannot grow. Each problem successfully met leaves its residue of sentiments and organization; without these sentiments and organization, future problems could not be solved.³

While part of this community solidarity seems to occur somewhat spontaneously, there is an element of conscious effort on the part of community members to sustain morale and a great deal of initial concern is expressed whether the disaster event will have a serious effect on the continuity of the community. While much of this reassurance and reaffirmation occurs at the individual level, some organizations become involved in activities which relate to the process of maintaining morale. The agencies of mass communication in particular become involved in such activities. The outputs of the mass media outlets after impact have seldom been analyzed for such content. Moore, however, did report an analysis of the Waco-Sun Times and its treatment

of news of the tornado in 1953.⁴ He suggests from a content analysis that immediately after impact, there were two focuses of attention -- the first was the aid which was received to ease the blow suffered by the community and which would speed recovery, and the second theme was interest in human beings who had suffered in unexpected ways and had lived to tell of their experiences and of their struggles to rebuild their lives. Another theme appeared later centering around plans for rebuilding. This theme, however, was not apparent until more complete information was gathered and arrangements were made for action. An interesting by-product of this event was that there was an immediate jump of 50 percent in the circulation of the newspaper after the event. This increase, however, rapidly disappeared and within three weeks circulation was down to normal level. People seemingly wanted news and, in getting it, they were also reassured as to the future of the community.

This reassurance can be seen more clearly in another example, when a tornado struck Belmond, Iowa, a town of 2,500, on October 19, 1966. The next day The Belmond Independent published an eight-page paper.⁵ On the front page, the major feature story was a description of the event. The other stories on the front page carried the following headlines: "Agencies Tell Assistance Available," "Industries Rush Recovery," "Twister Closes School This Week," "IEL and P Gets 'Em Strung Up Again" (i.e., the power company), "Red Cross -- Angel of Mercy," "Disaster Bill Passes." There was also a human interest column which gave anecdotal accounts of the event. Two of the other pages were filled with photographs of the event. Another two pages were filled with an ad with the following caption:

Belmond is coming back and without the help of hundreds of helpful people -- young and old -- it just wouldn't have been possible. Because of your generosity in time and money all of the city's business district will be back in business -- some now -- some very soon -- and some just a little bit later. We thank you from the bottom of our hearts. Never will we forget how you helped us when we were down!

The ad was "signed" by 48 different businesses, each with its own additional note. In another full-page ad, a local bank expressed the following sentiments:

There is still a Belmond, with a bank ready to aid its community's wonderful people. It was our good fortune to be spared any real damage, for which we are grateful. We stand ready to be of assistance to anyone needing our help. After all, what are friends for?

The major story on the front page ended on the following notes:

Belmond is looking ahead. It has received perhaps the cruelest blow ever dealt an Iowa town in the way of a natural catastrophe. But it is far from being beaten. In fact, from the standpoint of becoming a finer community than ever, the future actually appears bright.

While the mass communication groups are probably involved in such activities more than any other community organizations, various individuals with particular organizational activities often provide the content of the material which is transmitted. Political officials, such as mayors, governors, congressmen, senators, and even presidents, make visits to the impact area and make statements reassuring those in the impact area and those who become involved in the remedial activity of their continued support, through material aid and moral support. Organizational officials within the community often reflect the same concern for their own employees and devote a certain proportion of their time to activities which can be interpreted in this context. To a certain extent, this activity is a continuation of "boosterism" which is characteristic of most communities but, because it is assumed that a stricken community must have a greater need to be reassured, more time and effort may be devoted to these activities.

Turning to the situation in Anchorage following the 1964 earthquake, we find numerous examples of morale-maintaining activities at the individual and interpersonal levels as well as at the official and organizational ones. City officials and radio station personnel seemed concerned in the hours after impact that many residents would either become hysterical or highly discouraged in the face of the massive damage to familiar landmarks. The earthquake occurred just after 5:30 p.m. on a Friday, and the request, which was made before midnight, that the mayor and the governor's representative come to speak on one of the stations can be regarded as a morale measure. In fact, almost every city official participating in emergency activities during Friday night spoke on the radio at one time or another or had announcements made in his name. Military officers were also put on the air.

At midnight, the mayor drafted a public information release which gave a straightforward account of what had happened and the steps being taken to restore community activity. Another important broadcast occurred right after the 3:00 a.m. meeting of local, military, state and federal representatives, when a detailed account of the statements made was aired. This kind of public service broadcasting continued throughout the emergency period. It was estimated that 4,000 messages were broadcast over one station alone during the first 72 hours after impact.

Accounts by local residents indicated a sense of isolation immediately after the earthquake. Silence -- no telephone, no power, no television, no radio, nothing -- prevailed; every mechanical means of communication seemed to have stopped. This was followed by concern for family members who were absent or for friends who could not be directly contacted. Hearing the familiar voice of local radio announcers and later of well-known public officials or important military officers was reported as having a considerable positive effect. Below are some announcements made Friday night which illustrate the concern with morale:

We can feel fortunate that Anchorage was not completely leveled. Anchorage has sustained a great deal of damage and it has been a shattering blow to a very proud people. However, many of us have enjoyed, actually

taken a great deal of pride, in seeing the way the people of Anchorage, Alaska can rise to the occasion.

I have talked with ham operators and they assure me that the outside world is aware of the fact of what has happened in Anchorage.

A spokesman for the National Guard said:

The Guard was scheduled to start for home at midnight. However, that has all been cancelled. . . . We have most of our communication gear here in town and 150 troops and the rest are standing by. . . . Transportation has been made available to the civilian community. . . . Anything we can do to help out, rest assured that we will make it available.

We are still having a number of people coming in and offering their services here in the Public Safety Building. I believe everything is pretty well under control and survey teams are beginning to come in and report. . . . The general has been in here now conferring with the Civil Defense, Civil Air Patrol, city police, city fire department. . . . Also /the assistant/ of the governor's office. All of the state of Alaska, all of the military installations, all military and civilian personnel have turned to and are giving a terrific effort right now on search and rescue.

For several days after impact, continual efforts were made to keep the residents informed about the situation in Anchorage. Daily press conferences were established, beginning Sunday afternoon at 4:00 p.m. The civil defense public information director beginning Monday worked at presenting all the information available to prevent unnecessary duplication and contradiction, and to correct false stories about unreported deaths or collapsing buildings. Efforts were also made to make official announcements "low key" so as to prevent undue alarm or concern. Information of a positive or encouraging nature was played up; difficulties were presented in a less dramatic way. Later, one official commented:

You can read a carefully prepared announcement and it may be prepared with a low key; key the thing real low because you don't want to get anybody excited. The problem you're dealing with may not be one that would cause anxiety unless you took it wrong, so we worded it so we got the point across without any possible double meaning. . . . /Otherwise/ a lot of people are prone in a situation like this to jump to the worst possible conclusion and so these /were/ the things we /were/ trying to guard against -- not to give anybody listening in any possible opportunity for a double meaning. We said exactly what we meant.

On Wednesday, the second day after the downtown area was opened to the public, a civil defense release stated that there was no reason to keep business neon lighting dark: "Approval has been given to light the Anchorage skyline once again." To be able to encourage the businessmen and the community at large to use electricity in any amounts and to "light the skyline" again was a final assurance that things had indeed returned to normal, and that the physical and technological base for community was either restored (electricity, gas, water, food, fuel, housing, streets, etc.) or restorable.

This, of course, followed the strenuous effort to reopen the downtown area, which began Sunday and reached its peak late Monday afternoon. It was felt that if business activity was not restored to some semblance of normalcy many local residents might start leaving the community. City officials were especially concerned about making it possible for local banks to open by Tuesday morning. Monday would normally have been a bank holiday and thus it was felt that opening as usual on Tuesday morning would provide a great morale boost for the community.

One other matter should be mentioned here. There was a tremendous surge of messages -- via teletype, ham radio, etc. -- which came into the community as soon as these means started operating after the disaster. Over 20,000 telegrams alone were reported to have arrived during the first four days. These were brought to state civil defense, to city civil defense, and to both Salvation Army and Red Cross headquarters for disposition. Since many local residents had been displaced by the earthquake and others were not home because they were working around the clock on emergency tasks, it was very difficult to deliver all the messages. Teenagers and Boy Scout groups, as well as adult volunteers, were used as runners to trace down recipients of messages. With telephone service improving over the weekend, many persons could be phoned and asked to come to headquarters to receive their messages. Again the sense of urgency, the need on the part of responsible officials to deliver these messages, would seem to indicate an effort to restore morale.

In summary, the community organizations which become most involved in activities relating to the process of maintaining morale are the mass communication agencies: radio, television, and newspapers. As is illustrated by the Anchorage situation, other organizations such as civil defense, Red Cross, and Salvation Army become at least tangentially involved in such activities. These activities tend to be widely diffused through the community. Various individuals and organizational officials such as mayors, governors, senators, and military officers usually contribute to the process of maintaining community morale.

Collecting and Transmitting Information

Three other processes are generated within the community by a disaster event, one of which is collecting and transmitting information. While this process is obviously evidenced in the community prior to the disaster event, the actual form it takes during major emergencies is somewhat new. Collecting information about a community prior to a disaster event is usually done with

a degree of leisure and with specific purposes, perhaps of a particular organization. A disaster event accentuates this process considerably. There is a need for information about impact. This is necessary in order to understand the dimensions of the task which now faces the community. How many people are injured? How many people are still to be rescued? What areas of the community have suffered impact? What is the nature of the damage in these areas? What meaning does this damage have for future operation of the community? Disaster activity, of course, is initiated without much of the above information. The Anchorage situation is very instructive in this regard and thus will be presented in detail.

In the Alaskan earthquake, the collecting and transmitting of information was exceptionally important, but no specific organization tended to see information processing as its major task. Medical organizations were primarily concerned with caring for the injured and maintaining their ongoing operations. Organizations concerned with utilities collected information, but mostly that relevant to damage to their own facilities. Furthermore, they often did not share this with other groups, nor were they aware of the status of other aspects of the emergency. Welfare agencies concentrated on their own problems.

The scope and severity of the earthquake was not well known, and consequently there were numerous efforts to obtain additional details. Some of these attempts were direct efforts at seeking information; in other cases, news and details were obtained in the context of attempting to accomplish certain tasks. Simultaneous with early attempts to post guards and to control the movement of people in the damaged areas were efforts to reconnoiter the situation. As with the other activity, initial efforts were confined either to isolated individuals or specific organizations. There was no arrangement to pool or share information on a community-wide basis, nor on an inter-organizational basis.

For example, the fire department sent trucks and crews out to various parts of the city to check on the condition of streets, to make a survey of potential fire hazards and to extricate victims wherever they found them. This information was reported by radio to headquarters at the Public Safety Building. Additional details were provided by returning crews reporting directly. The chief also made several tours in his car to inspect damaged areas.

The police department followed much the same procedure, sending patrol cars to various areas of the city where they checked on conditions generally and reported on their radios back to headquarters. Other organizations acted in somewhat the same fashion. The director of public works, using a radio in a city vehicle outside the Safety Building, asked his foremen to reconnoiter conditions in their areas. When the city manager called him on the radio, he reported what had been learned by his personnel up to that point. The manager then made a personal inspection of as much of the downtown area as he could.

The mayor initially had not noticed much severe damage but after leaving the Public Safety Building on his way to the Air Force base saw one of the major slide areas and became firmly convinced that a major problem confronted

the city. Still enroute to the base he noticed a break in a gas main and stopped at the municipal power plant nearby to learn what had happened there. He was informed that, while the two large turbines were in operating condition, it would be necessary to switch to diesel fuel since the gas service had been cut off.

Thus, when the mayor returned to the Public Safety Building sometime before 7:00 p.m., he became another major source of information along with the police, fire and public works personnel already mentioned. In addition, of course, additional information was constantly being brought to the scene by the people converging on the building -- volunteers offering their services or equipment, soldiers, displaced victims of the earthquake, other city employees, etc. However, while there was a vast input of information, it was not centralized at any focal point. Given this, there is no surprise in the fact that the information that emanated out to the community also was uncoordinated.

Three of the local radio stations were on the air. One was broadcasting announcements and information from state civil defense headquarters; another was broadcasting news from the Safety Building. The third station rebroadcast the releases of the first station. In effect, all were on full-time public service broadcasting.

Between 8:00 and 8:30 p.m., one station succeeded in placing their mobile "camper" broadcast unit just outside the Safety Building. With a long microphone cord, the announcer was able to stand right next to the police and fire dispatchers and immediately to broadcast any message desired. General news and information were still presented but, as the possibilities of broadcasting requests for men and materials became evident, officials at the Safety Building began to rely more and more on this station for announcements and pronouncements. In addition, many personal messages were broadcast as calls came in to the station asking for information on the whereabouts of family members or friends.

By 8:30-9:00 p.m. there was information available at various places, but it was uncoordinated and most of it was unverified. Decision makers had great difficulty assimilating different reports amid the pressures for action and the general hubbub in the Safety Building. At 9:00 p.m. the mayor attempted a personal survey of all damaged areas but in the darkness found it very difficult to get an overall picture of what needed to be done.

Upon returning to the Safety Building he asked that teams be sent out to do reconnaissance throughout the entire Anchorage area. These teams were not to assist the injured or help in rescue work, but to survey the extent of the damage, make visual estimates of what services and utilities were disrupted and ascertain whether there were any explosions or fires. Team members were to report back to the Safety Building. (In actuality, teams with somewhat similar tasks had already informally started to operate several hours earlier and some of their damage assessment reports had already been received.)

Meanwhile, the mayor continued to accumulate information from the public works director, the city manager and other city officials who were in turn receiving reports from their field crews. However, it continued to be difficult to get a very clear sense of the overall dimensions of the problem. Thus, at 11:00 p.m. the mayor again made a personal tour of damaged areas, extending the scope of his survey to include areas he had not known about at 9:00 p.m.

After the mayor returned it was determined that a general meeting of officials should be called to pull together information from all possible sources and to formulate an overall plan of action. Local, state and federal officials were asked to come to a 3:00 a.m. meeting at the Safety Building. This announcement was broadcast a number of times over the mobile radio unit near the building.

The period from 3:00 a.m. Saturday through Monday night involved a continual effort on a community-wide basis to acquire accurate information about the situation. City officials sought it. The public presented a constant barrage of questions and requests; state and federal officials, newsmen, business and professional people from out of town -- all sought information.

Perhaps nowhere else is the sense of dependence upon accurate and complete information at the community level so directly evident to an observer as during the immediate emergency period following a disaster. Gaining control of the situation seems contingent to a major degree upon obtaining, disseminating and utilizing correct information. While this discussion is not an attempt to describe all information-seeking and distribution activity, several types of information which seem most relevant will be examined -- (1) missing persons, (2) appraisal of damage, (3) inventory of supplies, and (4) public information. Again because of the richness of the details available, the Anchorage, Alaska case will continue to be used as the example, although quite a similar general picture could be depicted if New Orleans after Hurricane Betsy or Topeka after the 1966 tornado were used as the illustration.

1. Missing Persons. The activity of the radio broadcasting stations in Anchorage has already been mentioned above. By the time of the 3:00 a.m. meeting, the precedent was well established that public radio announcements could be used to convey personal messages, especially those asking for a response from or information about missing family members or friends. When the Salvation Army at the meeting reported that they were trying to reunite families and would establish a personal message service that morning, broadcasting station representatives suggested that the public was already depending upon the radio for personal messages. It was agreed a missing persons registry would be established at the Salvation Army headquarters at 8:00 a.m. Saturday morning with radio announcers continuing to relay information and personal requests directly to the public. In a broadcast right after the meeting, those in charge of public shelters were asked to take a census of persons in each shelter and to report the information. Families who had provided shelter to others were also asked to report names, ages and addresses.

All day Saturday there was continuing pressure from newsmen and the general public for information about the number of casualties. As knowledge of the extensiveness and scope of the earthquake became known, there seemed to develop an expectation of far greater numbers of killed and injured than had been initially reported. City officials themselves expected search teams to find many more casualties as the damaged sites were thoroughly searched. Inquiries were referred to the Salvation Army headquarters where new names were constantly being added to the list and others checked off when they were located.

On Sunday morning, city civil defense broadcast an announcement indicating that the Red Cross had 30 workers taking messages for people and helping reunite families, thus paralleling the Salvation Army operation. The announcement also said that the city civil defense "will keep a list of known missing persons only." Anyone living in the hardest hit section of Anchorage who knew that a person was missing, was asked to call city civil defense.

After the press conference, which was held from 4:00 to 5:00 p.m., the mayor requested that a full-scale missing persons bureau be set up at the Safety Building to provide a definitive answer to persistent questions concerning unfound casualties and/or missing persons, especially from one area in Anchorage. Using lists from the tax assessor, the public utilities, and the public schools, a master register of over 300 names was put together. Other agencies were asked to submit the lists of missing persons they had compiled to civil defense headquarters.

At 10:20 p.m. Sunday, a public announcement was broadcast indicating that the city civil defense was developing a roster of residents who were known to be missing. All residents of the most heavily damaged area were asked to call in so that their names could be checked against the master list. Persons knowing of residents who were missing or out of town at the time of impact were also asked to report that information. Persons reported missing, who were not from the most heavily damaged area, were placed on a separate list.

When the roster was reduced to more manageable length, the missing persons bureau began broadcasting lists of persons reported missing and asking, if anyone had seen these persons since the earthquake, to call in that information. The earliest extant list was broadcast at 2:00 a.m. Monday morning. Six more lists were broadcast in the next twelve hours.

Public response to these announcements was immediate. One of the volunteers staffing the bureau reported, "We would have a new list out barely 20 minutes before we had reports on half the people in it." Thus, on Monday, the master list of those known missing was rapidly depleted during the day. By 4:00 p.m. the last group of names was broadcast and by 6:00 p.m. only six names remained to be cleared. At midnight only three remained and by 10:30 a.m. Tuesday the last person on the roster had been located.

2. Appraisal of Damage. Inventory and damage appraisal was initiated in a general way on Friday evening about an hour and a half after the earthquake. Damage assessment teams brought reports to the Safety Building. City and

private utilities crews were also doing much the same in the course of restoring services. However, specific and detailed appraisal of private property did not begin until Saturday morning when a public announcement over the radio called for "everybody that is fairly qualified to appraise property loss or damage" to report to the library downtown. A more detailed appraisal of public utilities, streets, and buildings also got under way with daylight on Saturday morning. Each utility assigned men to draw up estimates of damages, the timing and costs of emergency restoration, and the cost of permanent repair or replacement.

Appraisal of damages to public and private buildings, equipment, and facilities was included in estimates of damage, emergency restoration, and long-term rehabilitation which were presented at the press conference on Sunday afternoon. These figures were later used in reports to state and federal agencies and became the base of reference for early rehabilitation efforts.

3. Inventory of Supplies. Some estimates of fuel and food supplies had been made on Friday night and voluntary rationing was suggested, but firm figures were not available. In fact, one of the purposes of the 3:00 a.m. meeting was to discuss the supply situation with regard to food, fuel, and medical items. State civil defense appointed coordinators in the first two areas; the state public health office was already checking on available medical supplies. Fuel rationing and emergency price fixing were discussed on Saturday. However, aside from the informal and voluntary rationing urged by public announcements, no formal control measures were put into effect. By Sunday it was established that there was an ample supply of food available in the Anchorage area. A public announcement was made at 7:30 p.m. on Sunday that there was a 30-day supply of food on hand and available through normal shopping sources. Temporary shortages on some items were to be expected because of delays in distribution from local warehouses, but there was no food shortage. Double emphasis was given to the statement, "Do not buy large supplies of anything -- take it easy and everyone will eat comfortably."

The fuel situation was clarified at a 1:30 p.m. meeting on Sunday of local fuel suppliers called by state civil defense. A Monday morning announcement said that all types of fuel were available locally through regular purchasing channels. "There is no need for stockpiling or hoarding." The community was urged to follow their regular shopping practices.

4. Public Information. Public information was a difficult problem. Reports and stories of all kinds soon developed and were broadcast. Statements were attributed to official sources which had not been authorized by them. With three broadcast sources and multitudinous "officials," this confusion was not surprising. There was, inevitably, much overlap and repetition in what the community was being told.

Awareness of a need for better control of emergency public information particularly developed on Sunday after several conflicting accounts were released over different stations. By evening, city civil defense officials had developed an official form with a line for signatures to be used in public announcements. This helped but did not really get at the basic problem.

On Monday morning the former civil defense public information appointee for the greater Anchorage area was asked to take charge of public releases. It was agreed that every release would be signed and the source indicated. Thus, both origin and authorization could be accounted for if everyone followed the procedure.

A system for reproducing releases was set up, as was a news desk for reporters in the lobby of the Safety Building. Dates, time, and authorizing signature were on each release. However, inaccurate stories and conflicting accounts continued circulating throughout the day and for some time afterward.

The control measures instituted by the public information director began to take effect on Tuesday. On that day, each station was asked to apprise its listeners of the official or unofficial nature of announcements being made: "If it's not on the official release paper, make it completely clear that it is not official." The purpose of this statement was to eliminate indiscriminate broadcasting of whatever was handed to reporters and announcers. Broadcasters were also asked to guard against reporting any material which might cause undue anxiety. They were likewise requested to read official releases verbatim, without any ad-libbing or change. No announcement was to be repeated unless it was read in its entirety. After this, the situation improved but problems still continued.

When city civil defense moved back into its regular offices at 9:00 a.m. on Wednesday the information director had a broadcast booth with a direct link to all local stations available to him. Thus, he could broadcast urgent items over all local outlets simultaneously and be sure what was said as well as how it was said. However, direct broadcast was not used very often, since few matters were considered to be of sufficient urgency to justify it. All official releases were mimeographed and made available to the stations as well as other organizations involved in the emergency effort.

Inaccurate stories persisted during this four-day period and beyond. The information section of civil defense was kept busy trying to reassure residents and locate sources of such accounts. Particularly trying were broadcasts which stated that certain apartment buildings had been condemned or were in danger of collapse and needed to be evacuated. These caused strong reaction, especially among persons living in such quarters.irate owners also called civil defense. They reported that their renters were moving out or that they had evacuated the building and demanded to know what had been happening. In one instance, the building stood close to a bluff line and apprehensive residents quickly left when a broadcast, repeated several times, indicated that it was being evacuated. The information director called the station involved and was told no such announcement had been made. Later, after civil defense had officially announced that there was no basis to the story, it was again repeated. Another telephone call finally prevented a rebroadcast of the inaccurate account.

Various incorrect stories persisted for some time after the emergency period -- that another and more severe earthquake had been predicted, that the entire downtown area of the city would have to be relocated, that there had

been far many more casualties than officially announced. This last story had its inception immediately after impact when the number of casualties seemed too small for the magnitude of the destruction. Careful checking of all missing persons reports usually produced evidence that supposed victims were alive and uninjured. Yet, as late as April 23, the civil defense office had to release a lengthy statement supporting the accuracy of previous reports. One of the paragraphs illustrates the problem rather well:

Although mannequins or dummies or parts thereof have been removed from the Penney building, no human bodies have been found since the night of March 27. Even then, the only casualties in or near the Penney building were outside the building on the adjacent sidewalk. The city of Anchorage is neither concealing bodies nor suppressing information concerning missing persons.

In summary, it would appear that the process of collecting and transmitting information after disaster impact is very crucial and involves numerous community officials and organizations. Initially, the police and fire departments seem to become most heavily involved in obtaining and processing information. The mass media agencies soon become very instrumental in the gathering of news, and later in the emergency period such organizations as civil defense and welfare groups devote considerable time to the collection and transmission of information. In general, although information processing is an ongoing process in any community in normal times, few community organizations are prepared to cope adequately with the tasks associated with this process during a disaster.

Controlling Activities and Coordinating Involvement

Two other processes, controlling activities and coordinating involvement, are closely related to the process of collecting and transmitting information. In fact, in the previous section much of the illustrative material often involved consideration of all three processes because they are so interrelated. Here, the last two -- controlling activities and coordinating involvement -- will be discussed.

In normal times, overall control of community activity is seldom necessary. In most instances, each community organization has traditional tasks which are understood by other organizations and these tasks are usually carried out independently and without conflict or confusion. This being the normal case, there is little impetus to coordinate activities in an overall fashion within the community. There may be occasional jurisdictional disputes among organizations or a periodic recognition of unmet community needs, but these are recognized and perhaps settled through negotiation over a period of time.

After disaster impact, the situation changes drastically with respect to the processes of controlling activities and coordinating involvement. There is a tendency to overestimate the event. The community then mobilizes what Barton has called a "mass assault."⁶ To a certain extent, one could say that

everyone starts doing everything at once. As realistic needs become apparent, some mechanisms are necessary to allocate the resources of the community toward these high priority needs. Information is so crucial to the control of activities that the two tend to go hand in hand. In other words, where information is collected, this tends to be the locus of the control of disaster-related activities within a community. And because many individuals and organizations within the community become engaged in non-traditional activities, the whole problem of coordination becomes problematic.

In some instances, of course, the need for control and coordination may be recognized prior to a disaster event and mechanisms developed to facilitate the process. In the following case study, the nature of the disaster agent was such that information concerning its impact could be anticipated. The projection of the flood crest and the knowledge of community topography allowed prior knowledge of the areas to be evacuated. The control and coordinating functions within the community were assumed by an ad hoc group formed prior to the impact. The time allowed for gathering information and developing the embryonic coordinating groups would not, however, be available in agents with sudden impact.

In Eagle Pass, Texas, the city council-city manager structure became the central organization for handling community problems and crises. During the flood emergency of June 27, 1954, the city manager continued to direct the disaster activities and this direction resulted in a high level of coordination and integration.

On June 27 at 9:00 a.m., the fire marshall received a message from the International Water and Boundary Commission's office in Del Rio warning of a record-breaking flood. The fire marshall called the city manager who then called together the U.S. immigration official and police chief for a conference. They decided to go warn the Piedras Negras officials. The city manager, police chief, fire marshall, county sheriff, and city mayor met in the city manager's office at 9:15 and decided to make that office the headquarters for emergency activities with the city manager in charge. Their first activity was warning businessmen, families, farmers, and ranchers, in threatened localities. During the day, a series of meetings were held with the above-mentioned officials plus the county judge, the head of the state health unit, and the chiefs of the sanitation and water works departments and the power company. There was constant emphasis upon coordination of efforts in Eagle Pass through such conferences of officials and there was agreement that decision making power should be placed in the hands of a central agency, the city manager. There was also the general conviction that early flood warnings should be treated as reliable even though few officials felt there was much danger.

By 6:30 the next morning evacuation crews, composed of city firemen, policemen, county law enforcement officers, and city sanitation and road crews, were evacuating lower threatened establishments. Requests went into the city manager's office and then were radio-relayed to police cars who then told the evacuation crews. By 1:30 p.m. a warning had been received that the flood would reach a record-breaking 54 feet. The city manager had a line painted along main-street shop windows indicating the level the flood would reach to convince people of the seriousness of the threat.

The river rose rapidly and a request for help was sent to the state safety and defense headquarters in Austin at 3:00 p.m. All such requests for aid issued by the various organizations were signed by the city mayor, city manager, and the county judge. Coordination was thus achieved. Around 7:00 p.m., a unit of 60 National Guard troops arrived. These National Guardsmen and the county road personnel worked closely with city and county personnel already in the area. The Eagle Pass police station served as a relay station between the road workers and National Guardsmen. The city manager's office served as a coordination and dispatch center. A member of the state highway patrol was sent by the Disaster Control Center to coordinate activities on the local, state, and international level.

Fifteen highway patrolmen were sent to help in communications and to maintain order. A highly coordinated cleaning effort involving the state highway department, county roads, city roads and sanitation, fire department, National Guard, and U.S. Army troops began the twenty-ninth as a result of conferences among the city manager, city engineer, city sanitation office, and county and state organizations. Such a pattern of coordination continued throughout Eagle Pass's rehabilitation program.⁷

The above case study points out that organizational performance of tasks associated with controlling activities and coordinating involvement depends in large part upon the availability of accurate information. When such information is available, community officials and organizations become actively involved in the process of control and coordination previous to disaster impact. However, it is usually after impact that the diversity of activity necessitates some exchange of information among organizations charged with responsibility in various segments of community life. Normal lines and procedures of coordination which exist prior to the emergency often do not easily sustain the overload created by impact. It is characteristic in many widespread disasters for a meeting to occur which brings together representatives from many segments of community activity to "report" both on the damage as

well as the activity and resources required to restore some semblance of working order. In Anchorage, such a meeting took place at 3:00 a.m., Saturday morning. Beginning before midnight, city officials broadcast announcements concerning this meeting and requested the presence of specific individuals or their alternates representing local, state and federal interests. City department heads met with the city manager between 2:00 and 2:30 a.m. to sketch out preliminary reports for the meeting. When the meeting convened at 3:00 a.m. in the basement gymnasium of the Safety Building, there were over a hundred present. The room was filled. The mayor took charge calling the meeting to order and briefly outlining the purpose of the meeting. He indicated that city civil defense would coordinate emergency activities and programs developed to cope with the situation. The acting civil defense director then asked for the various reports.

As the reports were given a general sharing of information followed each one. Suggestions were given for resolving difficult problems and assignments were made for work which needed to be done. Requests and needs were presented to the entire group for solution. The meeting lasted for an hour and 50 minutes and, when it terminated, city officials felt that they had received a fairly good picture of the overall dimensions of the problem. Later, when referring to the meeting, one of them called it "a strategy conference . . . for the purpose of formulating an approach to the common problem, of maintaining the public order in the best sense we could." Many other meetings followed this one but, as a general meeting of all relevant agencies, it was unique. Later meetings involved more specific groups or agencies such as press conferences, city staff meetings, meetings of city administrators with state and federal officials, meetings with military commanders and city council meetings with department heads invited. In fact, city staff meetings were set up twice daily for more than a week afterward. The mayor also arranged for daily press conferences beginning on Saturday evening.

In summary, it would seem that many community officials and organizations become involved, but no particular organization ends up in a position of overall control and coordination. In the two case studies referred to above, emergent groups formed and assumed control and coordination functions. Considering the inadequate preparation within communities to cope with control and coordination tasks during a disaster, it is anticipated that emergent organizations probably arise in most disaster situations to handle control of activities and coordination of involvement.

Conclusion

While certain activities of a disaster event are obvious -- rescue and casualty care -- we have in this chapter been dealing with others which are not so obvious. More specifically, we have focused upon the community response to the processes of maintaining community order and morale, collecting and transmitting information, controlling activities, and coordinating involvement. The tasks associated with these processes often tend to be neglected initially. As a result, they often become the focus of attention later when they are made

more obvious by their problematic character now aggravated by inattention. As was pointed out in this chapter, such less obvious tasks often become the major basis for the development of emergent groups within the community.

As well as these emergent groups, numerous other community organizations become involved in one or more of these processes. For example, almost every organization within the community is initially involved in an inventory of damage to its own facilities and services, but this information tends to remain within the organization that gathered it. It is not until the first few hours after impact that an emergent group usually arises to cope with centralized collection and transmission of information, and the related matters discussed in this chapter.

FOOTNOTES: Chapter VI

1. Charles E. Fritz and J. H. Mathewson, Convergence Behavior in Disasters: A Problem in Social Control (Washington: National Academy of Sciences-National Research Council, 1957), pp. 7-8.
2. See, for example, E. L. Quarantelli, "Images of Withdrawal Behavior in Disaster: Some Basic Misconceptions," Social Problems, VIII, No. 1 (Summer, 1960), 70-79.
3. James S. Coleman, "Community Disorganization," Contemporary Social Problems, ed. Robert K. Merton and Robert A. Nisbet (New York: Harcourt, Brace and World, 1961), pp. 573-574.
4. Harry E. Moore, Tornadoes Over Texas (Austin, Texas: University of Texas Press, 1958), pp. 194-205.
5. The Belmond Independent, October 20, 1966.
6. Allen H. Barton, Social Organization Under Stress: A Sociological Review of Disaster Studies (Washington: National Academy of Sciences-National Research Council, 1963), p. 75.
7. Adapted from Roy A. Clifford, The Rio Grande Flood: A Comparative Study of Border Communities in Disaster (Washington: National Academy of Sciences-National Research Council, 1956), pp. 48-52.

CHAPTER VII

EXTERNAL- COMMUNITY INVOLVEMENT IN LOCAL DISASTERS

Introduction

As was indicated in Chapter I, responsibility for disaster activities is on the local community in the United States. Although local authority is normative in disaster situations, this does not exclude the participation of state and federal governmental agencies. Because of the growing interdependence of local communities, every community also is considered a part of the total well-being of a state, a region, and a nation. Since the political jurisdictions of extracommunity agencies often extend in some fashion into a specific community, state, regional, and federal agencies also tend to become involved in a community response to a disaster. Too, certain disasters may be sufficiently destructive of local resources to necessitate the intervention of extracommunity agencies in assuming operating roles within the devastated community. In addition, even without justification of responsibility, other extracommunity agencies on the basis of wanting to help often extend their activities to the local community. In this chapter, we focus upon these extracommunity responses to a community disaster.

For the subsequent discussion, it is useful to distinguish two types of community involvement by external organizations -- vertical and horizontal. In some of the examples of extracommunity involvement in local disasters, the relationship between the local unit and the state, regional, and national elements is hierarchical. With the Red Cross, the Salvation Army, civil defense, the military, and government, as one moves from the local level to the state, regional, or national level one tends to move "up" the ladder of authority. The highest authority in these organizations is inherent at the national level. When aid is sent from the national, regional, or state levels in the form of personnel, needed supplies, resources, or supervisory officials, it flows "down" to the local level. Because of the spatial model suggested in the above examples of nonlocal involvement, the relationships of any local community organizations to state, regional, or national headquarters will be called "vertical ties."

External-community involvement in the local social system may also, however, be "horizontal." In this instance, one can consider aid as filtering into the community from nearby communities. This involvement enters the local system at numerous portals and with various degrees of legitimacy. It can range from the convergence of unwanted sightseers, to the acceptable convergence of persons who are engaging in search and rescue activity, to the informal involvement of organizations from neighboring communities, to the formal involvement of external community organizations who enter the local system because of a response to a mutual aid agreement. This filtering of nonlocal aid into the local system by way of the above channels will be considered as constituting the local community's "horizontal ties."

Vertical Relationships

At times, a disaster event may overwhelm a local community, and in these situations, the community may desire or at least not reject assistance from the outside. Many organizations within a community are likely to have connecting ties to larger and more inclusive units of the same organization on the regional, state, or national level, and elements of these more inclusive units are likely to become involved. Two community organizations frequently involved in disaster activities which have ties to the more inclusive organizational units are the Red Cross and the Salvation Army. Each of the organizations will be discussed briefly. Two other illustrations of vertical relationships will be highlighted. In many community disasters, various military units become involved. Since these military units are under the jurisdiction of state and/or national governments, their mobilization and use require the consent and cooperation of officials outside the affected community. In addition to the use of the military, local communities often request state and federal aid. Again, such requests necessitate the involvement of "higher" levels of governmental authority in the local community.

Red Cross

The Red Cross is a dual organization. It has a charter from Congress and a national organization with a professional staff. As well, it is a local community organization through which volunteers, assisted by professional staff, provide educational and relief services for the community. We shall focus on this dual nature of the organization -- its national-local structure -- in our consideration of Red Cross involvement in disaster operations in a community.

The Red Cross is actually a three-level organization: national, area, and local. The national headquarters is located in Washington, D.C., and there are four areas with headquarters in Virginia, Georgia, Missouri, and California. The area level is a staff extension of the national level. The area offices are staff offices and no personnel regularly operating from these offices are volunteers. At the local level there are some 3,700 Red Cross chapters and the total volunteer membership of the American Red Cross is estimated at 2.2 million.

The Red Cross disaster operations tend to take on a nonlocal character of rehabilitation relief in a community disaster. There are rural sections of the United States which lack a local chapter altogether. When these areas are impacted, the total administration of Red Cross disaster relief must be carried on from outside. Such a contingency is reported in a study of the effects of Hurricane Audrey.¹ The nearest established chapter to the heavily damaged Cameron Parish was in Lake Charles, some 50 miles away. The authors of the Louisiana study point out that the Red Cross operations were nonlocal because a Lake Charles chapter and not a Cameron one was involved. In such instances the Red Cross operations cannot be local. Even when Red Cross chapters are already established in disaster-stricken communities, nonlocal area-national staff generally become heavily involved.

One of the first responsibilities of a local Red Cross chapter in the event of disaster impact is to inform the area office in which jurisdiction the chapter is located. On the basis of this initial report and estimations of the resources required to provide adequate and efficient disaster relief, a decision is made on the advisability of mobilizing area disaster staff and resources to supplement those of the local chapter. Such a decision is made by the area manager. The area manager may delegate authority for the disaster operation to a field director, chosen from among area disaster staff. The field director is responsible to the manager of the area in which the disaster occurred. Area-national staff assigned to the disaster relief program work under the field director. In major disasters area-national staff from all four jurisdictions of the national Red Cross are assigned to disaster operations. Red Cross literature reports, for instance, that "850 national and chapter staff members from 48 states" were actively involved in the relief operations which followed the impact of Hurricane Betsy in September, 1965.²

There are two elements which are sometimes characteristic of the relationship between local and area-national staff. The first element can be called "functional overlap" which involves the merging of officially discrete local and area-national disaster responsibilities. The second element is "structural separation" which involves the physical and organizational segregating of local and area-national staffs. When these two elements characterize a Red Cross disaster operation -- when both local and area-national staffs are involved in mass care and rehabilitation, but when these two levels of the organization perform independently of one another -- then problems like task duplication, conflicting decisions, and incomplete communications may result.

The first source of these problems is the overlapping of authority and tasks between area-national and local personnel. Theoretically, the emergency mass-care program for which the local chapter is responsible should be phasing out as the rehabilitation program, for which area-national staff are primarily responsible, is beginning. Thus, the change in the type of relief and shift in authority for the programs should be accomplished with little or no difficulty. However, just as the area-national staff attempt to integrate local personnel into the rehabilitation phase (since that program will ultimately be a local responsibility when area-national staff are demobilized), so local staff often require personnel and financial assistance from area-national resources during the chapter's mass-care program. A completely discrete division by authority and task functions between the levels of the organization thus is not always desirable during a disaster.

Problems in coordinating the levels of Red Cross also appear to arise with structural differences between local and area-national staff. In any disaster operation, area-national staff are "outsiders" and chapter staff are "locals." As types, the two have varying interests in the disaster situation and, similarly, varying modes of task performance. Area-national staff are more professional and cosmopolitan in the sense that their allegiance is to the total Red Cross organization and its policies rather than to a particular chapter and its disaster program in one community. They are thus more bureaucratically oriented in the performance of disaster tasks. This orientation is a result both of their professional-cosmopolitan status and of the

rehabilitation phase of disaster relief with which they are charged, this phase of the operation being somewhat more formal and structured than the local's mass-care phase.

The area-national staff often tend to occupy a rather dominant role in community disasters. They tend to view all volunteers -- both trained and walk-in -- as amateurs. In fact, one study reports that some area-national staff view almost all chapter personnel, paid staff as well as unpaid volunteers, as disaster volunteers.³

In some community disasters there is a physical separation of the area-national and local levels of the organization. Describing this separation of levels, one respondent said:

It was like a void. Local people would be on one side of the room and national would be on the other and they'd look at one another. . . . It was like we had a big board right down the middle.

He ventured an explanation for this "void" in the fact that certain members of his chapter had what he considered unrealistic expectations for the performance of area-national staff in a disaster. "The national staff moved in," he said, "and the contention was, 'Well, national staff is here, we don't have to worry any more.'"

The area-national staff and local staff often operate from two independent disaster headquarters, and the normal difficulties associated with communication and decision-making are compounded. On the other hand, there are advantages associated with having two separate headquarters. An area-national staff member made the following assessment of such a situation:

This building is serving two disaster functions right now. The . . . chapter has their own disaster within their own jurisdiction. . . . So the chapter is handling this job. And then in the meantime we have been coming in and the chapter's making space available to us. This is very nice of them, but we are going to have people coming in from all over and setting up the overall headquarters so then we consider it wise to shop around in the community for a headquarters other than the local chapter headquarters. In a sense it doesn't pay to have two jobs going on in one building because it causes confusion in the minds of people.

It may also cause confusion, he suggested, in the bookkeeping: local and area-national accounts, when merchants are given the same address for both, have become mixed up, the local chapter paying for area-national supplies and vice versa. "You know how it is," he said, "so we establish separate headquarters." This is the officially defined Red Cross procedure for local and area-national staffs in disasters.

Both local and area-national Red Cross were heavily involved in the New Orleans floods at the time of Hurricane Betsy. Two days after the hurricane, local and area-national staff decided to reevacuate the many separate shelter operations and consolidate these into long-term super-shelters. This reevacuation marked the official end of the local chapter's authority over relief operations. Once relocated, the evacuees were the responsibility of the national staff who were in charge of the super-shelters. This shift in authority, however, did not mean that the members of the local chapter had nothing more to do in providing services to disaster victims. The local staff was actively involved in rehabilitation work under the supervision of the area-national staff. This shift in authority from local to area-national staff occurred before the mass-care phase of the relief program was completed. In fact, the mass-care sheltering operation continued in New Orleans for several weeks, but it continued under the supervision of the area-national rather than the local staff. One staff member contrasted this overlapping of the two phases of Red Cross work in Hurricane Betsy with his previous experience:

In other past disasters we've been fortunate enough just to have the emergency mass-care phase and then that's over and everybody returns to their normal assignment and the national organization takes over. But this thing was so enormous and went on for so long and so many volunteers were needed in the relief centers . . . that it would seem that the operations should be conducted . . . by one person.

That one person, in this case, was the disaster field director, a member of the area-national staff.

Although the authority for the disaster programs shifted to the area-national level, there were still, in effect, two separate operations. The area-national operations were based at a super-shelter and the local level operated out of the New Orleans chapter house. No crucial problems developed as a result of this double organization, although some respondents did suggest that a clearer division of labor and authority between the area-national and local levels is desirable in a disaster operation. In this emergency, the very nature of the floods, especially the duration of the emergency, probably mitigated against such a division.

In summary, we have examined the consequences of the assignment of area-national Red Cross personnel to a community disaster operation. The basic rationale for this assignment is to increase the local organization's resources to cope with the emergency, but this increase sometimes becomes the source of operational problems.

The Salvation Army

The Salvation Army, a national and international organization, is organized on the basis of a military model. In the United States the national headquarters is in New York and the country is divided into four areas (commonly referred to as territories): Eastern, Central, Western, and Southern.

Each of these areas has a territorial commander called a commissioner. The corps is the basic local organizational unit within each of these four areas. A corps is a post under the leadership of one or more officers. A number of corps grouped together is called a division and is under the direction of a divisional commander. Divisions may cover a state or several states, and in 1963 there were 44 divisions in the United States. In large communities there are usually several corps combined under a city command. Although technically the city command, of which there were 12 in 1963, is under division command, it maintains a degree of autonomy. The city command is a relatively new innovation that enables Salvation Army activities in a larger city to be under one authority rather than being split up into several corps units. In summary, the organization of the Salvation Army consists of four main levels in the United States: national, territorial, divisional, and local units.

Local Salvation Army units may seek assistance from the divisional, territorial, and national levels during a community disaster. Salvation Army units at the various levels contribute personnel, supplies, and equipment upon request. This involvement of nonlocal levels may become quite extensive as in the case of the 1964 Alaskan earthquake. In numerous Alaskan communities, Salvation Army became involved in extended operations that included many financial transactions in an attempt to help restore the economy as well as the provision of immediate relief services. A divisional level operation provided money that was obtained by special permission from territorial funds to local units. Initially \$10,000 was sent to each local unit in Alaska. With these sums of money Salvation Army underwrote community projects and business rebuilding. As well, some equipment was purchased to enable some industries to return to operation. In one instance, the Salvation Army supplied money to move a whole village.

When there is a warning period prior to impact, the local Salvation Army units inform divisional and territorial headquarters of anticipated disaster activity needs. In most cases, personnel and canteens from the divisional and territorial units reach the community prior to or shortly after impact.

According to The Salvation Army Manual for Emergency Disaster Service, a disaster zone commander is responsible for all Salvation Army disaster activity in a community during the emergency period.⁴ As was the case in New Orleans during Hurricane Betsy, the city commander usually becomes the disaster zone commander. In New Orleans the division commander and division secretary assisted the city commander during the disaster, although the city commander was officially recognized as disaster zone commander with authority over all Salvation Army emergency operations. The disaster zone commander made all major decisions, including assigning of personnel, deciding the extent of Salvation Army involvement (what services to render), and arranging and purchasing supplies.

Disaster plans of the Salvation Army tend to change the authority structure which exists during normal times. As was mentioned above, the city commander usually becomes the disaster zone commander and this places him in a unique position in relation to the divisional commander who is normally his superior. Conflict may arise between the positions of disaster zone commander

and divisional commander especially if the disaster operations center is in the city in which the divisional headquarters is located. Authority in such situations tends to be problematic.

The matter of authority is also involved when Salvation Army personnel from nonlocal units become involved in a community disaster. Many of these personnel are officers and most have been involved in previous emergency operations and are often more experienced than local personnel and possibly even the disaster zone commander. These people often assume, or try to assume, authority because of their rank or previous experience. As one respondent noted:

Some of the officers who came in from out of town, just because they were officers they felt they could give orders to other people, and we got a few conflicting commands from them.

Disaster plans specify authority structure in emergency operations. However, there is potential for problems as indicated above if the disaster zone commander cannot assert his authority over incoming personnel.

Military Involvement in a Community Disaster

Military units often provide assistance to communities during a disaster. The defense department of the federal government can "provide military assistance when the overruling demands of humanity compel immediate action to protect lives and property" and often does, particularly when a disaster occurs near a military installation. In addition, the National Guard is a state military force used primarily for state emergencies. While it can be federalized by the President under certain emergency conditions, National Guard personnel are often used in widespread disasters. At the request of the state governor and under the command of the state adjutant general, the National Guard may be activated and units assigned wherever additional manpower and equipment might be needed.

Military organizations are involved in community emergency relief operations in most disasters. The National Guard is usually mobilized at the request of local community authorities when it appears that the problems engendered by an emergency are beyond resolution by community capabilities. The involvement of the federal armed forces usually follows the declaration of a major disaster by the President. However, the involvement of federal armed forces is not totally dependent upon presidential action. Even in the absence of a declaration of a major disaster, the Department of Defense has authority to lend state and local authorities rapid assistance following disasters.

In instances where disasters are of such imminent seriousness as to preclude the receipt of timely instructions from higher authority, a commander of an installation will take such actions as is necessary

liaison personnel work on an over-lapping shift basis, thus their effectiveness is not usually decreased due to a lack of rest. At times civilian officials seem to resent having to deal with a number of rotating military coordinators, feeling that valuable time is being lost as the new or changed coordinators have to be updated on what has been occurring. There seems little question that the advantage of having alert and rested military officers in this kind of situation is partly counterbalanced by their lack of knowledge of what has been going on and which is quite familiar to their civilian counterpart.

In almost all disasters in the United States, community officials maintain their overall civilian authority; and all organizations which become involved in emergency operations coordinate their behavior with that authority. In other words, the usual pattern in a community disaster is for community officials to exercise their legal authority over civilian emergency measures. Given this, the military functions in a supportive role, formally maintaining authority over its own units. Deviations from this expected and traditional pattern sometimes occur, which seem to be the result of local community officials not carrying out their legal authority. Such circumstances may lead to the military assuming overall authority on an unofficial basis with community officials still nominally in control. Another deviation which can develop following a community disaster is for military and community officials to share informally authority in the situation. Finally, the possibility that martial rule will be declared officially subordinating civilians to military authorities is a probability, although a very remote one in the United States, given the value system of the society.

The nature of military-civilian relations during a community disaster is exemplified in the situation during the 1967 flood in Fairbanks, Alaska. Responding to requests from community officials, the military provided considerable assistance to the disaster-struck community. The prime military assistance came from the Army base, which is located adjacent to Fairbanks, the Air Force base located about 23 miles from Fairbanks, and from units of the Alaska National Guard, including the local Fairbanks unit.

The Army assisted the Fairbanks community in a supportive manner. The form of assistance fits the cooperative pattern. Due to the degree of geographical isolation, there exists a high degree of interdependence between the Army base and Fairbanks community during normal times. The hospital at the Army base became the "community" hospital after the evacuation of the Fairbanks hospital. Army personnel assisted in evacuation and search and rescue activities in Fairbanks.

The Air Force also provided considerable assistance to Fairbanks. Helicopter pilots from the base became involved in search and rescue in the community. As well, the helicopter operation distributed critical supplies during the emergency. Civilian authorities, both local community and state officials, channeled requests for military helicopters assistance through military authorities who were responsible for determining priorities and establishing coordination in the air operation. The Air Force assistance to Fairbanks was supportive in nature with civilian authorities initiating the requests for assistance.

Several National Guard units assisted the flooded community. The National Guard played a major role in surface rescue and transportation. During the emergency period, thousands of residents of Fairbanks were transported from flooded areas to emergency shelters. The National Guard also assisted by transporting and distributing emergency relief supplies throughout Fairbanks as these arrived from outside communities and states. The Army National Guard provided police security for the community. The Air National Guard transported several thousand Fairbanks evacuees to Anchorage and flew tons of needed supplies to Fairbanks. The National Guard worked in the main under the authority and general direction of the Alaska Disaster Office, the state civil defense agency.

In summary, the organizational character of military units makes them particularly useful to communities during disaster. They have an established chain of command and division of labor, and they are geared for rapid response to emergencies. In addition, military units possess a reserve of trained manpower and equipment which is usually required in emergency situations. In the United States, the military is expected to play a supportive rather than a directive role during a community disaster, with overall authority remaining in the hands of community officials.

Horizontal Relationships

The previous section has concerned itself with external community relationships which were vertical in nature, i.e., those community ties which were based on more inclusive organizational and/or governmental units. Consideration here is given to horizontal relationships, or the aid which comes into a community from nearby communities.

It is perhaps useful to mention certain differences between vertical and horizontal ties. One of the most obvious is simply one of distance. Help flowing into the community from state, regional, or national sources is likely to have to travel great distances to reach the impact zone. The distance that most supplies, equipment, and personnel cover in reaching the impact area from surrounding communities is often much shorter. It may entail driving from a suburb into the central city or into "town" from the surrounding hinterland.

A more subtle difference is the definition of those who come to help by the local community. Incoming personnel from organizations with vertical ties are often more likely to be defined as being outsiders. Such individuals often come in the community with backgrounds and perspectives which often may be at variance with local customs. They may lack familiarity with the specific community and be somewhat insensitive to particular and peculiar local practices. On the other hand, individuals whose ties are horizontal are more likely to share the common cultural base and thus not as apt to be seen as "an outsider." Such definitions can become barriers which would affect emergency and rehabilitative action.

The distinctions between vertical and horizontal relationships also relate to problems of legitimacy and authority. In vertical relationships, the request for aid on the part of a local agency somewhat legitimizes the "intervention" of the external organization. Too, when personnel come from outside the community, their authority vis-à-vis local personnel in the same organization is likely to be regulated by organizational policy. This does not mean that there are no authority problems and problems of integrating the two "staffs." The previous illustrations of vertical relationships indicate that there is. The norms which govern horizontal relationships are likely to be even more vague. External community involvement entering the system through the horizontal channels may or may not be legitimate, and the authority relationships between the local and non-local organizations may or may not be structured. As previously suggested, some of the involvement on the part of organizations and individuals coming from the surrounding area may be viewed as illegitimate by the local community. Sightseers who converge on the impact area are an obvious example. Of course, other forms of involvement, such as aid that is not formally requested by the local community, may ultimately be viewed as legitimate. For example, a neighboring community may rush its fire-fighting equipment and personnel into the impact area even though they were not requested.

Aside from legitimacy, there are problems of authority inherent in horizontal ties that may not be found in vertical ones. Authority in vertical ties normally resides at the higher levels, i.e., state, regional, and ultimately national headquarters. With horizontal ties, however, the units are all at the same, local level. Furthermore, they are all trained and prepared to operate autonomously. For example, if community A sends its fire department to aid community B, who assumes command? Does A retain authority over its force while aiding B's department? Or, instead of this autonomous relationship, does B assume control of A's force, or vice versa? Problems of competing authority, multiple authority, and jurisdictional disputes obviously may arise. Coordination of the emergency effort may prove to be extremely difficult. These authority relationships may not be structured. They may also, however, as in the case of many mutual aid agreements, be highly specific.

We have already discussed convergence behavior in Chapter VI. At this time let us focus upon only one aspect of horizontal non-local involvement, i.e., mutual aid agreements. While mutual aid may be involved in such various community organizations as hospitals, police forces, utility companies, etc., for illustrative purposes we will further limit our discussion to those involving fire departments.

Mutual Aid

It is obvious that in most types of disasters fire departments are among the first organizations to respond. In addition to their firefighting activity, these departments often are involved in first aid, search and rescue, ambulance service, and communication activities.

While the internal structure of fire departments may vary from community to community, their similarities in structure are more important than their differences. Although some departments may be on a three-platoon basis while others may utilize an eight-hour shift, firemen are usually on a 24-hour alert. They are full-time civil employees. Like the police department, the organizations tend to be bureaucratic in nature using the military model. Within each department are a number of stations, each with one or more companies and their equipment. There are normally four to seven men on duty at all times in each company. The company officer is commonly a lieutenant or captain. When more than one company is housed in a station, there is seldom a clear line of command from one company officer to another. In actual fire-fighting, however, each officer is responsible for his own company. Command relationships normally follow military lines. In addition, within a particular department, there are rules developed governing which companies will respond to a fire. When a fire occurs, the senior officer responding has full responsibility for fighting the fire and complete authority over the force at the scene.

While most major American communities have full-time fire departments, often their suburban neighbors and the smaller towns in the hinterland utilize different structures. Many of these latter communities have volunteer firemen on a stand-by basis who leave their normal employment to assist in fire-fighting. Others use a cadre of full-time employees which is supplemented by volunteers in emergency situations.

In addition to the capabilities which may exist within a particular community, adjacent communities may be asked to furnish aid in case of a severe fire, or on the multiple problems created by a disaster event. Many local departments have mutual aid agreements with their neighboring communities or integrated plans for response to any fire. Such agreements, of course, result in both expense and benefits to each of the communities involved and always necessitate decisions as to how far an intercommunity response will be carried.

Mutual aid agreements may run the gamut of complexity. At one extreme the agreement may simply be between two neighboring rural towns. At the other extreme, one may encounter a situation like that of Los Angeles in which the central city has agreements developed with tens of surrounding communities, and these suburban areas themselves have agreements with their neighbors. For illustrative purposes, let us examine the plan for a medium-to-large-size city.

City A has a population of about 600,000. In its metropolitan area there are approximately 950,000 people. The city is surrounded by 20 suburban communities and a rural hinterland. The fire department of City A numbers 687 men and 43 clerical personnel. There are 23 stations in the city fire department. A chief is the administrative head of the organization. He is assisted by six assistant chiefs. Three of these assistant chiefs are in charge of operations and are in command on one third of the department's operations. (The department uses the three-platoon plan in that all personnel work 24 hours and are off duty for 48 hours.) The other three assistant chiefs are in charge of fire prevention, training and services, and department

coordination. Ten battalion chiefs are under these men. The department is fairly progressive and well equipped. In addition to its normal fire-fighting equipment, it has extensive supplies of such resources as heavy-duty trucks, off-road equipment, rescue and emergency trucks, foam equipment, medical supplies, etc. Its normal response to any fire is to send two pump trucks and one ladder truck to the conflagration. If additional resources are needed, a modified "task force" plan is initiated. This plan is based upon dividing the city into three zones. The "red" zone is the zone of conflagration. The "white" zone is a staging and command area on the periphery of the "red" zone. The "blue" zone is the surrounding area. Additional resources are brought into the "red" zone from the periphery. If more resources are required, off-duty personnel are brought to the scene. Finally, if the demands made upon the organization still exceed its capabilities, the department can seek aid from its surrounding suburbs through its mutual aid agreement.

City A has a mutual aid agreement with 95 percent of the surrounding communities, most of whom have volunteer departments. The agreement assures reciprocal aid between the cooperating departments. It is very general in nature and basically states that the fire department of City A agrees to furnish City B with any equipment, resources, or personnel needed at the time of an emergency, and vice versa. The plan is specific, however, in three respects. First, it definitely states what authority and command relationships will exist between the department that seeks aid and the department that offers it. In all cases, the department that seeks aid, i.e., the department within whose jurisdiction the emergency is occurring, retains command over all fire-fighting equipment and personnel in the area. Therefore, if suburb B with a volunteer department were to seek the aid of City A's fire department and other suburban departments, then suburb B's department would be in command of all of the fire-fighting units in its community. As was previously mentioned, authority relations in instances of horizontal involvement may often be problematic because all of the units involved are "local," are trained to function autonomously, and are therefore "equal" in authority. In this instance, the interorganizational problems of authority could even be more aggravated due to the wide discrepancy in the intraorganizational structures of the various departments. This mutual aid plan circumvents this problem by explicitly positing what form the authority patterns will take.

The plan is specific in two other respects. It specifies to what particular station each incoming department is to report. Information and orders will be issued to the incoming department at this point. Finally, all of the participating departments have a master key of all available equipment, resources, and personnel in the area. For example, the key tells not only how many men and trucks each department has available, but also the supply of such articles as resuscitators, stretchers, communication equipment, medical supplies, etc. This key allows the rapid location of needed resources.

This above plan has been instituted in this area in the past. It has proved to be quite effective, and is offered here as an example of one type of horizontal involvement, in this case, a structured mutual aid agreement.

The following example illustrates how various non-local units may become involved in a local fire. It should be noted that the example is rather unique in that it occurred in Los Angeles -- a city with a vast mutual aid plan, an extraordinary history of large brush fires, and one of the largest and best equipped fire departments in the world. It does, however, offer an excellent example of horizontal involvement.

Drought conditions which dried the brush and winds of between 25 and 50 miles per hour assisted the spread of the Bel Air-Brentwood fire. It originated on the northern slope of the Santa Monica Mountains just beyond Stone Canyon Avenue. The first alarm was received at 8:15 a.m. on November 6, 1961, and within the hour three signal stations in the area were flooded with calls.

The first chief who arrived on the scene requested that the "Major Emergency" plan be instituted and asked for 15 additional engine companies with six chief officers. A "Major Emergency" was declared at 8:26 a.m. Within minutes a headquarters command was established at the central office of the department. The headquarters command furnished logistical support to the field forces engaged at the fire, and maintained liaison with other agencies and officials.

In accordance with "Emergency Operating Procedures" requirements, all bureaus of the fire department supported suppression activities of the fire.

Two field command posts were established, both moving twice during the first day as the fire progressed. The first was a mobile unit from which tactical forces on the northern portions of the fire were controlled. The second was installed in various fire stations and controlled operations on the southern and eastern flanks of the fire.

In mid-afternoon of the first day, a general field headquarters was activated at a mountain patrol station. The activities of combined forces ranging from 1,200 to 2,500 men per day were coordinated from the headquarters. There were over 200 city, county, state, and federal fire-fighting apparatus and a large number of other vehicles and equipment from outside and private agencies which participated in the operations. Ground crews were obtained from the county juvenile camps and from nearby military installations.

At the fire scene, the first units to arrive attempted to protect homes at the point of origin and in the vicinity of Mulholland Drive. There was not enough fire equipment on hand to contain the conflagration at that time. After the "Major Emergency" declaration, incoming units were placed on a nearby road to prevent the spread of the fire. The blaze spread south and east, spurred on by high winds from the northeast. Although bulldozers cleared the brush from the ridge between Stone Canyon and Beverly Glen, which reduced the fire volume, the flames surged into Beverly Glen. Twenty-two engine companies were sent into the canyon from air tankers, succeeded in stopping the eastward movement of the fire on the west side of Beverly Glen.

Sector commanders tried to keep the fire from the Bel Air District. Equipment was deployed along Stradella Road above the west wall of Stone Canyon to protect the homes there. Other units were thrust across the canyon to intercept the head of the fire which was forging down the canyon. However, wind-driven bits of burning vegetation were spotting many new fires far ahead of the main front. Firemen, straddling the path of the flames, soon found the fire to their backs. The fire leapt into several nearby streets.

Companies leap-frogged each other southward along Stradella Road and Linda Flora Drive to protect newly threatened homes, and hundreds of structures were so saved. In spite of the effort, the fire outdistanced the units and ignited in advance of them. The smoke reduced visibility to a few yards in places.

The fire clawed into the upper regions of Bel Air on a wide front. In places, ignition was resulting from flying brands landing on combustible roofs. At this time, there were more structures on fire than there were companies to deal with them. The companies attempted to protect areas where they could save the greatest number of houses and restrict fire travel, but were hampered by overtaxed radio communications, poor accessibility and a dearth of water at some of the higher elevations.

Shortly after noon, flying brands hurdled the San Diego Freeway and approached the campus of Mt. St. Mary's College and Brentwood. A rapid re-deployment of apparatus and manpower was made to counter this threat.

At 12:56 p.m. a new and separate blaze, the Santa Ynez fire, originated on city land and an initial response of three companies was dispatched. During the early stages of this fire, the county fire department handled it, which helped the heavily committed city department. The county department stopped the blaze on several fronts near populated areas, restricting it to brush land.

At 3:00 p.m. the velocity of the winds diminished considerably. On the western flank of the fire, as the flames began to descend into Mandeville Canyon, the fire command swiftly concentrated more than 50 engine companies in the canyon. Aided by an adequate water supply, the units let the brush burn down the slope to the houses and then protected these. No homes were lost. The westward and southward travel of the fire was arrested at about 8:00 p.m. on the first day.

The strong northeasterly winds died during the evening, and moderate breezes began to flow from the southwest. On the morning of November 7th, air tankers carried out extensive drops on this northern extension. Bulldozers worked in concert with these drops and ground crews mopped up. Limited backfiring was also utilized. Apparatus was emplaced south of Mulholland Drive to the east of Sepulveda to protect homes from this northward travel of the fire. Dorate drops were also made in this area. At 4:00 a.m. on November 8th, this fire was effectively controlled.⁶

A Final Note

Throughout the discussion of vertical and horizontal relationships, a number of problems have been highlighted, primarily centering around the legitimacy of such organizations becoming involved and their authority vis-à-vis locally based units. While these problems are real enough in actual situations, to overemphasize them might lead to the unwarranted conclusion that external aid is useless because it is problematic. Many communities affected by a disaster event need outside help and most receive it. During the emergency period, many of the problems relating to external involvement are mitigated by what earlier we called the emergency consensus -- that is, the community agreement as to the priorities of action necessary to accomplish the immediate tasks. If a fire has to be fought, it is unlikely that the aid of a fire company from a neighboring town would be rejected until the problems of command are settled. In fact, one of the common characteristics of the emergency period is the willingness of community officials to overlook and to ignore legal and jurisdictional barriers to effective action. The following observations of interorganizational and intergovernmental cooperation in the Topeka tornado in 1966 illustrate how complexities of cooperation among

existing organizations can also absorb new and/or infrequent relationships with organizations outside the community and the results be a "working" unit during the emergency period. The illustration also points out, however, that these issues and problems re-emerged after the recovery.

The first night after the tornado struck, the mayor, the city commissioners, the county commissioners, the governor, adjutant general, and city and county department heads met and worked out a scheme for apportioning responsibilities and assigning authority. This process of assignments and specifying responsibilities and defining authority was relatively casual and pragmatic. The mayor continued as nominal head of the recovery operations committee made up of various elected political officials, heads of city and county departments, and representatives of quasi-public groups.

During the recovery period of about ten days, inter-governmental cooperation proceeded with ease. In addition to the cooperation between the city of Topeka and Shawnee County during this period, a great number of municipal and county governments from Kansas and Missouri willingly provided men and equipment in vast quantities for the recovery operations. More than 60 discrete units of government representing local, county, special districts, and state government ranging from a volunteer fire department to the Executive Office of the President were directly involved in the recovery operations. No attempt was made during this period to clearly delineate the authority and responsibilities of various governmental units.

After the recovery period, questions of legal authority became prevalent. Intergovernmental relations subsequent to the recovery operation centered around the legal authority of various units of government to take certain kinds of constructive action, particularly any that involved expenses for construction of facilities destroyed by the disaster. Elected officials and department heads reverted to their more traditional ways of dealing with governmental affairs. Legal difficulties, chronic disagreement on the tasks that are ahead and how to meet them, and jealous guarding of prerogatives once again began to characterize relationships among units of government.⁷

Conclusion

In Chapter VII we have been discussing the involvement of external community resources in the local disaster situation. A distinction was made between the local community's vertical and horizontal ties to these non-local sources of aid. It was shown how these two types of non-local involvement differ with regard to such variables as distance from the impact zone, legitimacy of involvement, and authority and coordination problems. Specific organizations were examined as being illustrative of these types of involvement. Concerning vertical ties, we looked at the Red Cross, the Salvation Army, the military, and government. It was noted that horizontal involvement can take many forms ranging from the convergence behavior of sightseers and other individuals to the formal involvement of organizations who enter the community because of a response to a mutual aid pact. The fire department was offered as an example of the latter type of non-local involvement. Throughout the chapter the effort was made to stress that the greatest problems surrounding non-local involvement in the local disaster are those of coordination and authority relationships among the various units. When external organizations and individuals enter the community, they do not leave their cultural backgrounds, normative standards, unique life experiences, or previous disaster experiences at the city limits. New ideas, norms, and personalities intrude upon the local community and often enter into conflict with their more fully entrenched counterparts at the local scene. Authority relations may be especially problematic, as one group achieves authority and control at the expense of another. It was noted that this situation is even more volatile in instances of horizontal involvement in that the participating units are all "local," "autonomous," and therefore inherently "equal." It was shown how structured agreements may circumvent these problems. If coordination and authority patterns are not effectively developed, the problems of emergency and rehabilitative action are greatly increased.

FOOTNOTES: Chapter VII

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CHAPTER VIII

IMPLICATIONS FOR NUCLEAR CATASTROPHE

Introduction

In these concluding pages, implications concerning community functions in natural disaster will be projected into a more inclusive context which might occur in a nuclear catastrophe. The basic assumption made here is that the range of problems experienced by communities in a natural disaster would be similar to those which would be encountered in a nuclear catastrophe. While the scope of impact would be greater in a nuclear catastrophe and there may be additional problems, such as radiation, the nature and sequence of community tasks would be similar, and remedial action would come from those community organizations which still possessed capabilities.

It is assumed here that the delivery of a nuclear agent would come as a result of some military attack. In previous situations where civilian populations have been subject to direct military attacks, there is substantial evidence that such populations respond actively to such crises. Just as in disaster impact, the major burden of response to a nuclear agent would have to be assumed by existing community organizations and by the expansion of other organizations which become involved in emergency activity. This is currently assumed by the civil defense conception of emergency operations which treats existing community organizations as a cadre to be supplemented by the inclusion of auxiliaries or partially trained volunteers. The assumption is made that existing agencies of government will perform emergency activities related to those they perform in peacetime and that emergency operations will be carried out principally at the local level. Military assistance will complement and not be a substitute for civil participation in these emergency operations. Given these assumptions about the response to a nuclear agent, the various problems associated with the involvement of community organizations in disasters discussed in the previous chapters would continue to be applicable.

There are two consequences of a nuclear attack which would condition emergency operations. The major continuing threats to life and property following a nuclear attack are fallout radiation and fire. The feasibility of all other operations such as care of survivors or restoration of vital facilities will be conditioned by the nature of the radiation and fire situations. It is assumed here that operating conditions will vary from situations where both radiation and fire threats are negligible to a condition involving a most severe problem of fallout and uncontrollable fire. Particular areas, then, will be relatively free from attack, others will show moderate effects, and other areas will possess materiel and personnel support which can be used to assist areas suffering greater nuclear impact. The areas which would offer the best opportunity for effective action are the topic of concern in the following comments. Initially, similarities and differences between nuclear and disaster activities and processes will be discussed. Second, the implications concerning the involvement of organizations in these activities and processes will be specified.

Community Activities and Processes

The various processes which are evoked by a nuclear agent would be similar to those found subsequent to a disaster agent. During the emergency period, and perhaps starting earlier in the warning period, a consensus would emerge on the priority of values within the community. Core values, such as the care of victims, would become salient. Restoration of essential community services, the maintenance of order, and the maintenance of public morale would become increasingly important. Other activities within the community irrelevant to these values would become suspended. Citizen participation would be encouraged and community conflict minimized. In a nuclear event, such processes would be speeded up since, assuming some degree of warning, the cause of the destructive agent would be more easily identifiable than are many disaster agents.

The sequence of community tasks and the nature of these tasks subsequent to a nuclear attack would be similar to those following a disaster event. Some differences might be isolated, however. If nuclear attack is preceded by increased tensions, awareness of these tensions would serve to make warning signals less ambiguous among a target population. During the time of increasing tensions, information concerning the meaning of certain signals and the action required of individuals on receipt of these signals would increase the probability of effective preventative action.

Preparation for impact, rescue, caring for casualties would in many ways be similar. Protecting against continuing threat would have the additional problem of monitoring radiation and preventing fire spread. Community services would be more severely disrupted and the restoration of these services would take place in the context of continued threats of fire and radiation. The process of maintaining community order and morale as well as the processes of collecting and transmitting information would still be critical. In other words, all of these activities and processes would still be relevant. The accomplishment of emergency tasks would be more difficult than those subsequent to a disaster event since there is the threat of continuing fire and radiation.

Organizational Involvement

Drawing on the assumptions made about the consequences of nuclear attack on modern societies and the experience derived from observations in a wide variety of disaster situations, the following observations can be made concerning organizational involvement in these tasks.

1. Fewer established organizations would be involved in the resulting emergency activity than is the case in other community emergencies. In Chapter II, four different types of organizations were discussed. Those which carried on their traditional tasks with their pre-emergency personnel were called established organizations. In those emergency situations within a community which are restricted in scope and impact, such organizations usually carry the major burden of responsibility. In widespread disaster events, other non-emergency organizations supplement these organizations.

If the primary nuclear targets are urban areas, such areas are the location of the best trained and best supplied established organizations. In other words, metropolitan police departments have the equipment and personnel "worth" more than the added resources of many county sheriffs' departments. If these urban areas are target areas, it means that the resources of these established organizations are more likely to be destroyed. The areas outside the blast areas are more likely to be characterized by organizational "poverty."

2. More expanding and extending organizations will become involved and many more emergent groups can be anticipated. Given the loss of many established organizations and the increase in the scope of the tasks facing the community, this "gap" is likely to be filled by rapidly expanding cadre organizations, and by organizations not traditionally involved in emergency activity. In addition, the multiplicity of organizations involved without prior emergency experience or without specific emergency task assignment would lead to the development of the conditions resulting in the emergence of "new" groups.

3. Organizations within the community will have to make greater use of volunteers subsequent to a nuclear attack than they would in other types of emergencies. This is based on several related assumptions. First, the overall casualty rate is likely to be high subsequent to a nuclear attack. This means that all organizations will lose personnel, and in order to bring such organizations up to previous operating strength additional personnel will be needed. In addition, of course, the tasks confronting such organizations will be greater and will require greater organizational "effort." This effort is generally met by increasing personnel. This would mean that operative organizations would be likely to contain a higher proportion of volunteers to "regular" personnel than they would in other types of emergencies. Established organizations, in general, do not integrate volunteers easily into their structure since their previous experience as a work group creates a degree of cohesion making them not as permeable to "outsiders." In any event, volunteers as a source of organizational personnel make organizational operations more difficult since they do not know procedures. This means that regular organizational personnel will have to spend a proportion of their time in training rather than the achievement of particular tasks. Volunteers, thus, are more problematic than are "regular" personnel.

4. Remaining established organizations are more likely to take the form of expanding organizations. With the greater loss of life potential subsequent to a nuclear attack, few established organizations will be able to enter emergency operations with a full complement of personnel. This means that those personnel who survive will, in effect, be a cadre which will serve as the core personnel to be supplemented by volunteers and other personnel. This means that, in effect, new work groups are created for the emergency situations. "New" groups have greater difficulty in operating than do those which bring previous experience as a work group into the emergency situation.

5. Certain organizations will become more important in the resulting activity than they would in other emergency situations. Organizations which deal with more critical problems obviously become more important in the resulting emergency activity. This is an extension of the fact that community

organizations which deal with problems not relevant to the emergency usually do not operate. For example, most business and educational organizations cease operations in community disasters since their concerns are somewhat irrelevant to the immediate community concerns. On the other hand, those organizations dealing with victims, such as hospitals and other medically related ones, become central to emergency activity. In a nuclear situation, one could anticipate that with extensive fire problems, fire departments would play a more critical role as would those organizations which deal with the detection and control of radiation. In most community disasters, radiation detection is irrelevant and fire control measures minimal.

6. Since the scope of organizational involvement would increase, critical problems of coordination of emergency activities would be created. Problems of coordination would be especially critical following a nuclear attack. This would result from several factors. First, communication, which is at the heart of coordination, would be restricted. Blast damage to the physical mechanisms of communication, e.g., telephone lines, radio antennas, etc., would preclude the use of much pre-emergency equipment. Second, the lack of a delimited and focalized impact zone and the diffusion of blast effects throughout wide geographical areas would create difficulties in focusing coordination. Third, the involvement of a wide variety of organizations in emergency action in itself creates problems. It is easier to coordinate 20 organizations than 40. Fourth, pre-impact planning for coordination is likely to have primarily involved only established organizations. Planning centering on only those traditional emergency organizations neglects planning for coordination for those organizations which "need" it the most. In one sense, planning usually involves those organizations which do not need coordination since they have more definite tasks and can work autonomously, but it tends to exclude those organizations which become involved with less definite tasks and which necessitate close cooperation with other operating organizations.

7. Certain tasks would assume much greater importance in a nuclear situation than in other community emergencies. Earlier, it was suggested that the nature of the community tasks and their sequence would be similar in a nuclear attack to that which is found in other community emergencies, particularly natural disasters. One specific task, however, is likely to be so different quantitatively as to make it quite different qualitatively. Even minimum predictions of casualty rates subsequent to a nuclear attack suggest hundreds of thousands of casualties. Most peacetime disasters involve relatively small numbers of dead. The Alaskan earthquake in 1964, as extensive as it was, only caused about 100 deaths. Disasters with what are considered to be overwhelming casualties such as the Khorassan earthquake in Iran in 1968 actually involved less than 10,000 dead over a large area. The point to be made is that in most peacetime disasters emergency organizations are seldom ready for, or is it necessary for them to handle, large numbers of dead. In most instances private organizations, such as funeral homes, or public officials, such as the coroner, handle bodies without added assistance. Such would not be the case in a nuclear situation. This would mean that individuals and organizations, not experienced in these tasks, would of necessity become involved, and this involvement is likely to be traumatic.

8. Certain tasks are likely to be slighted in emergency activity since (1) they are vague, and (2) they are not the responsibility of any specific organization.

(1) Vagueness. Certain emergency tasks are obvious. For example, rescue or the restoration of services command attention. Other tasks are vague and their lack of obviousness often results in lack of attention. One of the most critical needs early in the emergency period is information concerning "what happened." Individuals and organizations throughout the impact area have information as to what happened in their immediate environment but seldom know how to relate this knowledge to the larger picture. Putting together the larger picture is usually accomplished by hit and miss. Often such informational confusion is the initiating factor of the first efforts at coordination within a community. Individuals and organizational officials, each possessing some part of the puzzle, assemble and share their "restricted" perception of what happened. While accurate information is essential to effective action, its collection is often postponed for more obvious but less important tasks. Only when the collection of such information is seen as necessary for coordinated effort is information shared and put together in a coherent fashion. Since heavy damage to communication facilities can be expected subsequent to a nuclear attack, this will make the collection of information more difficult, and since the magnitude of the more obvious tasks will be greater, this would mean that the collection of information will become more difficult as well as being more likely to be delayed.

(2) Lack of assigned responsibility. Some emergency tasks, which are common and crucial, are not "assigned" to any specific organization. The lack of assignment implies that such tasks are not part of the pre-disaster activity of an organization and the task is often not fully anticipated in pre-impact planning. Such tasks are likely to be ignored initially and, later, to evoke the involvement of several organizations. Such multiple involvement necessitates cooperative and coordinated effort among the organizations, many of whom are "involved" for the first time. One example might make the point. Since search and rescue activities have a high priority within the emergency consensus, they often become the responsibility of everyone. On the other hand, systematic search is seldom the definite nor the planned responsibility of any specific organization. As we indicated earlier, in disasters much of the initial search and rescue is done by those in the impact zone, supplemented by help from those who converge from the fringe impact zone. Police and fire departments often become involved since they quickly become involved in any emergency activity, but both of these organizations do not see search and rescue as being a central and critical organizational obligation. If fires accompany impact, as they obviously would in a nuclear attack, the fire department may be completely involved in the tasks associated with the control of them, diverting attention away from search and rescue. If there are problems associated with convergence on and control of the impact area, the police department is likely to see this as its primary task. The important point is that there is usually no sustained systematic effort at search and rescue on the part of an emergency organization which considers this its major responsibility. This does not imply the necessity of inventing such an organization or the artificial assignment of an existing organization to such tasks. To a

certain extent, search and rescue tasks almost defy organization. Since they are immediate and urgent, they perhaps will continue to be met in somewhat a haphazard manner. They do get accomplished but often there is duplication of effort. Certain areas are often searched several times. Each search is generated by the fear, based on the lack of knowledge, that no one has searched the area. In the experience of the Disaster Research Center in a wide variety of situations, never has search and rescue been adequately coordinated nor has systematic information been assembled concerning the activities of the many individuals and groups which do become involved. Too, maps which indicate the existence of structures and their nature are seldom readily available to record damage and/or to indicate those areas which have been searched. Since search and rescue will be a significant problem subsequent to a nuclear attack and the area to be covered will be large and diffuse, the whole search and rescue problem requires more attention in organizational planning than it has now.

9. Communities would have to achieve tasks created by a nuclear situation with less help from external agencies. Many organizations within a community request and receive assistance from units of the same organization on the state, regional, and national levels. The Red Cross would be a typical example. In addition, when a disaster event is somewhat focalized, assistance is often provided from nearby communities in terms of materials and personnel. In a nuclear situation, nearby communities are likely to need assistance too, even though fire and fallout conditions may differ among nearby communities. Too, if nuclear effects are widespread, this would mean that "higher" organizational levels would be confronted by requests for assistance from a large number of communities with "equal" need. The resources of these higher organizational levels is generally not sufficient to handle multiple events. The consequence of this would be that the community would be very much on its own, having to base its emergency actions on resources still available.

One final note should be added. While it is possible to anticipate operational difficulties which community organizations would face in a nuclear situation, this should in no way suggest that such difficulties immobilize efforts directed toward emergency tasks. Perhaps as a reminder of the capacity of human organizations to function even under the most difficult situations one can quote from the diary of Dr. Hachiya, director of the Hiroshima Communications Hospital. This hospital was 1,500 meters from the hypocenter of the bomb dropped on Hiroshima. Dr. Hachiya became a patient in his own hospital and recorded his observations of hospital operations in the days following. In the following excerpt, Dr. Hachiya describes the activity on the day following the impact of the bomb.

Dr. Koyama, as deputy director, was given the responsibility of setting up an isolation ward. He chose a site on the grounds beyond the south side of the hospital, and with the help of some soldiers who happened along he managed to construct what amounted to a crude outdoor pavillion. What we were trying to do probably was not worth much, but it helped our morale to think we were doing something.

Dr. Katsube and his staff had an impossible task. There was scarcely a patient who was not in need of urgent surgical care. The doctors and nurses were all busy helping him. Even the clerical staff and janitors, and those among the patients who could so much as get about, were organized and instructed to help. If progress was made, it was hard to see. How Dr. Katsube did what he did was a miracle.

The corridors were cleared enough to be passable, but in a little while they were as crowded as before. One difficulty was the influx of people looking for friends and relatives.

Parents, half crazy with grief, searched for their children. Husbands looked for their wives, and children for their parents.

Not a few came in from the country to look for friends or relatives. They would wander among the patients and peer rudely into every face, until finally their behavior became so intolerable that we had to refuse them entrance to the hospital.

A new noise reached us from outside. On inquiry, I was told that Dr. Koyama had procured a company of soldiers to clean out the fire-damaged Communications Bureau, so that it could be put in use again as an annex to the hospital.

The pharmacy came to life. Our meager supply of drugs was sorted and prepared for use under the watchful supervision of Dr. Hinoi and Mr. Mizoguchi.

A little order was appearing; something positive was being done. Perhaps in time we could get control of the situation.¹

FOOTNOTES: Chapter VIII

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11. SUPPLEMENTARY NOTES This report is number 4 in the Disaster Research Center Report Series		12. SPONSORING MILITARY ACTIVITY Office of Civil Defense Office of the Secretary of the Army Washington, D. C. 20310	
13. ABSTRACT This report examines disaster activated tasks at the community level of analysis. The community is viewed as a problem-solving social system in which its principle sub-units, organizations, aid in performing the five basic community functions: social control, production-distribution-consumption, socialization, mutual support, and social participation. Changes in the priorities attached to these functions and in community values which occur with disaster are noted. After theoretically describing the community in pre-disaster or normal periods, the authors undertake an in-depth analysis of community tasks and activities corresponding to the various disaster stages of warning, pre-impact activity, rescue, caring for casualties, protecting against continuing threat, and restoring minimum community services. Furthermore, the major community processes of maintaining community services, maintaining community morale, collecting and transmitting information, and controlling activities and coordinating involvement are discussed. Finally, the involvement of non-local community units in local disasters is analyzed. Throughout the report each activity and process is discussed in terms of the specific community organizations that become involved in performing them. Specific inter- and intra-organizational problems, such as communications, coordination, control, etc., related to each activity are described. This report concludes with an analysis of community response to a hypothetical nuclear attack situation.			

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Organizations as sub-units of a community aid in performing basic community functions. The priorities attached to these functions change in disaster. The community is described in the pre-disaster state and during disaster. Tasks and activities and major community processes are analyzed. The involvement of non-local groups is discussed. Specific inter- and intra-organizational problems are described. Each activity is discussed in terms of the specific community groups that become involved in performing them.

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